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U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF ANIMAL INDUSTRY.

SPECIAL REPORT

ON THE

HISTORY AND PRESENT CONDITION

OF THE

SHEEP INDUSTRY OF THE UNITED STATES.

PREPARED UNDER THE DIRECTION OF

DR. D. E. SALMON,

CHIEF OF THE BUREAU OF ANIMAL INDUSTRY,

BY

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TABLE OF CONTENTS.

	Page.
Letter of transmittal	9
PART I.—THE SHEEP INDUSTRY IN STATES EAST OF THE MISSISSIPPI RIVER.	
BY EZRA A. CARMAN:	
Chapter I. The Wild Sheep of America, and earliest introduction of Domesticated Breeds	11
II. The Household Woolen Industry—1607–1800	95
III. Introduction of the Spanish Merino Sheep	131
IV. The Dissemination of the Spanish Merino throughout New England. Progress of the fine-wool industry and its decline	217
V. Introduction of the Fine-Wooled Sheep into the Middle and South Atlantic seaboard States, and the subsequent progress of Sheep Husbandry	349
VI. The Sheep Husbandry of Western Pennsylvania and the Pan-Handle of West Virginia	483
VII. The Sheep Husbandry of Ohio, Indiana, Illinois, Michigan, and Wisconsin	521
VIII. The Sheep Husbandry of Kentucky, Tennessee, Mississippi, Alabama, and Florida	657
PART II.—CONDITION OF THE SHEEP INDUSTRY WEST OF THE MISSISSIPPI RIVER.	
BY H. A. HEATH AND JOHN MINTO:	
Chapter I. The Sheep Industry in Montana and North and South Dakota	701
II. The Sheep Industry in Wyoming, Colorado, and Utah	771
III. The Sheep Industry in Minnesota, Iowa, Nebraska, Missouri, and Kansas	811
IV. The Sheep Industry in Arkansas, Texas, New Mexico, and Arizona	885
V. The Sheep Industry in California, Oregon, and Washington	947

LIST OF ILLUSTRATIONS.

PART I.—CHAPTER I.

	Page.
Mountain Sheep or Big Horn (Ovis Montana, Desm.)	10
Texel sheep	24
The Old Wiltshire sheep	44
Kentish or Romney Marsh sheep	44
The Ryland sheep	46
Old Norfolk ram	46
Tunisian Mountain (flat-tailed) sheep	78
Wicklow Mountain sheep	86
The New Leicester ram	88
The New Leicester ewe	88
Teeswater sheep	92
Southdown ram	92
The Southdown sheep	92
The Old Lincoln breed	92

CHAPTER III.

Spanish Merino ram, Don, of 1790	134
Merino ram, Don Pedro	136
Clermont	142
Rambouillet	142
Spanish Merino ram (imported at beginning of the present century)	150

CHAPTER IV.

Saxony Merino ram	228
Electoral Escurial ram	230
Electoral Escurial ewe	230
Infantado Negretti ram	230
Merino ram, Sweepstakes	262
Rambouillet ram of 1787	268
Rambouillet ram of 1873	268
Horned Dorset	280
Merino ram, Consul	284
Merino ram, Golden Fleece	294
Spanish Paular Merino ram, Fortune	298
General Fremont	298
Bismarck	322
Centennial	322

CHAPTER V.

	Page.
Registered Cotswold ram	368
French Merino ram, Louis Phillippe	380
French Merino ewe, Marquese de Ronge	380
Silesian Merino ewe	386
Merino ram, Osceola	392
Beacon Down ram	402
Merino ram, Addison	404
Merino ram, Hopeful	404
Merino ram, Genessee	404
Merino ram, Ruby's Boy	408
Merino ram, Onondaga	408
Merino ram, Ranzin	410
Merino ram, Longfellow	410
Merino ewe 141	410
Yearling Merino ewe of 1890	410
Yearling Merino ewe of 1890	410
Hampshire ram, Baron	416
Suffolk ram	422
Oxford Down ram, Freeland	444
Imported Southdown ram	452
Cheviot ram	472

CHAPTER VI.

Black-Top Merino ram, Success	496
Black-Top Merino ram, Walter	496
Black-Top Merino ewe, Madam	496
Dickinson Merino ewe, Emma	502
Humphrey's Merino ewe, Queen	506
Delaine Merino ram, Wall Street	510
Delaine Merino ewe	510
Saxony Merino ram	518

CHAPTER VII.

Wells & Dickinson Merino ewe of 1865	526
Merino ram, Snowflake	528
Merino ram, King, jr	542
Merino ram, Nobby Tom	544
Oxford Down sheep	564
Shropshire ram	586
Flock of Shropshire sheep	586
Merino ram, Premier	614
Pure Atwood Merino ewe	614
Rambouillet ram, Humber	634
Rambouillet ram, Golden Hoof	634
Lincoln ram	638

CHAPTER VIII.

Improved Kentucky sheep	664
Flock of Southdown sheep	666
Florida Piney Woods sheep	684

PART II.—CHAPTER I.

The Range Herder	700
The Camp Wagon on the Range	700
The Herder's Camp	700

CHAPTER II.

Page.
Sheep Barn at Grand Forks, N. Dak 770
Just in from the Range, Northern Montana 770
Farm Scene in Red River Valley, N. Dak 770
Sheep Ranch, near Conway, N. Dak 770
Oxford Down sheep, Wilmot, S. Dak 770

CHAPTER III.

Sheep Shearing on Ranch, Wyoming 810
A Ranch in Middle Park, Colo 810

CHAPTER IV.

In Camp en route to winter Range, Arizona 946
Lamb Corral on Ranch near Santa Fé, N. Mex 946
Single wool clip of a New Mexico ranch 946
Dipping sheep, Southwest Texas 946
Feeding Pens on a Ram Ranch, Western Texas 946
Ranch on Devil's River, Texas 946
View on Devil's River, Texas 946
Iron Mountain Ranch, Buchel County, Texas 946
Mexican Sheep Shearers, near Fort McKavett, Texas 946

LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., April 11, 1892.

SIR: I have the honor to submit herewith a report upon the history and present condition of sheep husbandry in the United States. The work has been prepared with great care and is believed to be thorough, comprehensive, and exhaustive. The first two chapters give the history of the first sheep introduced into the infant colonies, their characteristics, and their improvement, together with a brief sketch of the household woolen industry down to the period of the general introduction of the Spanish Merino breed in 1810–'11.

The third chapter is devoted to the history of the Spanish Merino and its introduction into the country between 1801 and 1811. Many hitherto unpublished facts are here presented, which are of interest as bearing on the economic history of the country and as affecting the pedigrees of noted flocks.

The remaining chapters of the report trace the history and progress of the sheep and wool industry in the several States, the introduction of the fine-wooled Spanish, Saxon, French, and Silesian in each, the varying phases of the wool industry, and the gradual extension of the English mutton breeds over the whole region, and the present status of the industry both for wool and mutton. Included in this treatment of the subject is the general and pedigree history of the early Merino flocks, traced from the first importations down to and, in some cases, including the flocks of the present day. There is shown the progressive improvement of the fine-wooled sheep now inhabiting the continent, the great increase in fleece and the tendency of its present development. The system of breeding pedigreed flocks and the management pursued by the most successful sheep husbandmen are given, covering a period of wide and varied experience from the beginning of the century down to the present day. The experience of those who have been the most successful in the breeding of the improved English mutton sheep has also been given, as well as the methods followed by those who have been most successful in supplying the markets with early lambs and mature mutton.

In that part of the report referring to the sheep industry in the section west of the Mississippi River will be found much new and extremely interesting matter in regard to the management, the present condition, and the prospects of this branch of the animal industry in that great region.

The illustrations have been selected with care and with the view of increasing the historical and practical value of the volume.

Taken as a whole, this report can not fail to be interesting and valuable to every owner of sheep. It will give a broader view of the industry, its magnitude, and the methods which are most likely to bring success in conducting its various branches.

An effort has been to state simply facts, leaving the reader to draw his own conclusions. Where that principle has been necessarily departed from in the report, the expression or opinion does not imply that the Department indorses it, but it is presented as the personal opinion of the writers of the report and must be judged accordingly.

Very respectfully,

D. E. SALMON,
Chief of the Bureau of Animal Industry.

Hon. J. M. RUSK,
Secretary.

HAINES AFTER HUMPHREYS.

MOUNTAIN SHEEP OR BIGHORN (OVIS MONTANA DESM).

PATENT OFFICE REPORT, AGRICULTURAL, 1851.

PART I—THE SHEEP INDUSTRY IN STATES EAST OF THE MISSISSIPPI RIVER.

By Ezra A. Carman.

CHAPTER I.

THE WILD SHEEP OF AMERICA, AND EARLIEST INTRODUCTION OF DOMESTICATED BREEDS.

The European discoverers and conquerors of the Western Hemisphere found no domesticated sheep such as they had been accustomed to (at their homes) in Portugal, Spain, Italy, England, and France. To the American aborigines the domesticated sheep of the present day and its progenitor were unknown, but in South America, especially in the regions of the Andes, the Spaniards found four forms of the genus Auchenia, the guanaco and vicuna, known only in the wild state, and the llama and alpaca, known only in the domesticated state, and used by the natives as beasts of burden and for their wool. These four animals appear so different that most naturalists, especially those who have studied them in their native country, maintain that they are specifically distinct, notwithstanding that no one pretends to have seen a wild llama or alpaca. Mr. Ledger, however, who has closely studied these animals, both in Peru and during their exportation to Australia, and who has made many experiments on their propagation, adduces arguments, which seem conclusive, that the llama is the domesticated descendant of the guanaco, and the alpaca of the vicuna. And now that we know that these animals were systematically bred and selected many centuries ago, there is nothing surprising in the great amount of change which they have undergone.* These animals all furnished wool for clothing, some of it of the finest quality, and the llama was used as a beast of burden. They possess great interest and form an important part in the industrial economy of South America, but can not here be discussed at length, and we pass to the consideration of the wild or native sheep of North America, then to the progressive introduction of the domesticated breeds and varieties of the Old World.

THE WILD SHEEP OF NORTH AMERICA.

The Rocky Mountain sheep, or Big Horn, the Argali of America, inhabits the loftiest mountain chains of North America, and was long ago described by Spanish writers and others as the sheep of California, and

* "Animals and Plants Under Domestication." Charles Darwin.

is familiar to the Indians and fur traders of Canada. It ranges from the region of the Upper Missouri and Yellowstone to the Rocky Mountains, and the high grounds adjacent to them on the eastern slope, and as far south as the Rio Grande. Westward it extends as far as the Cascades and coast ranges of Washington, Oregon, and California, and follows the highlands some distance into Mexico. It is found from Wyoming to California, though more abundant in the northern latitudes than in the southern. It appears to be more common in the Klamath basin, between California and Oregon, and the Blue Mountains traversing Idaho, Washington, and Oregon, than in any portion of the Pacific coast. This vast area, traversed in every direction by mountain chains ranging from 4,000 to 10,000 feet in altitude, furnishes it comparative security and nutritious vegetation.

When the first mission was established in California, in 1697, nearly two centuries after the discovery of that country, Fathers Piccolo and De Salvatierra found, says the former—

> two sorts of deer that we know nothing of; we call them sheep, because they somewhat resemble ours in make. The first is as large as a calf of one or two years old; its head is much like a stag, and its horns, which are very large, are like those of a ram; its tail and hair are speckled and shorter than a stag's, but its hoof is large, round, and cleft as an ox's. I have eaten of these beasts; their flesh is very tender and delicious. The other sort of sheep, some of which are white and others black, differ less from ours. They are larger and have a great deal more wool, which is very good and easy to be spun and wrought.

The animal mentioned in the latter part of the above quotation is the Rocky Mountain goat; the other is the Rocky Mountain sheep, or a species closely allied to it.

An extract from Venega's "History of California" follows closely the description given by Father Piccolo:

> In California are two species of wild creatures for hunting, which are not known in old or new Spain. The first is that which the Californians, in the Mouqui tongue, call a Taye. It is about the bigness of a calf a year and a half old, and greatly resembles it in figure, except in its head, which resembles a deer, and the horns very thick, like those of a ram; its hoof large, round, and cloven, like that of an ox; its skin is spotted like the deer, but the hair thinner, and it has a short tail. The flesh is very palatable, and, to most tastes, exquisite. The second species differs very little from a sheep, but a great deal larger and more bulky. These are of two colors, white and black, both well covered with excellent wool. The flesh of these is not less agreeable, and they wander in droves about the forests and mountains.

In 1803 Duncan McGillivray gave an interesting account of these sheep and the hunting of them on the plains between the Saskatchewan and Missouri rivers. They were found there in small flocks, and some were killed of great size. A male measured as follows: Length from the nose to the root of the tail, 5 feet; length of the tail, 4 inches; circumference around the body, 4 feet; the stand, 3¾ feet high; length of the horn, 3½ feet, and girth at the head, 1¼ feet. The horn was of a circular form, proceeding in a triangle from the head like that of a Merino ram. In appearance the animal was a compound of the deer

and the sheep, having the body and hair of the first, with the head and horns of the last. It was met with only in the Rocky Mountains, generally frequenting the highest regions producing any vegetation; sometimes descending to feed at the bottom of the valleys, from whence, on the least alarm, it retired to the most inaccessible precipices where the hunter could scarcely follow. Though clumsy in appearance it was nimble in action, bounding from one rock to another with as much facility as the goat, and making its way through places quite impracticable to any other animal in that country not endowed with wings. It seemed to encourage pursuit by frequently halting, sometimes retracing a few steps and staring at the hunter with a stupid curiosity that was often fatal to it. The flocks seldom exceeded twenty or thirty animals; as a rule not more than two or three were seen together. The female does not differ materially from the male, except in being much less in size and having a small black straight horn like the goat. The color and texture of the hair are the same in both, and they are distinguished by the white rump and dark tail. The female greatly resembles the domesticated sheep in her general figure, particularly in the timid cast of the countenance. The flesh of the female and of the young male is a great dainty, thought by some to be much more delicate than any kind of venison, and regarded by the Indians as the sweetest feast afforded by the forest.

John Richardson, who described the *Ovis montana* in 1829, says that it exceeds the Asiatic Argali in size and is much larger than the largest varieties of the domestic breeds. The horns of the male are very large, arise a short way above the eyes, and occupy almost the whole space between the ears, but do not quite touch each other at their bases. They curve first backward, then downward, forward, and upward, until they form a complete turn, during the whole course of which they recede from the side of the head in a spiral manner; they diminish rapidly in size toward their points, which are turned upward. At their bases, and, for a considerable portion of their length, they are three-sided, the anterior or upper side being, as it were, thickened, and projected obtusely at the union with the two others. This side is marked by transverse furrows, which are less deep the farther they are from the skull, and towards the tips the horns are rounded and but obscurely wrinkled. The furrows extend to the two other sides of the horn, but are there less distinct. The intervals of the furrows swell out, or are rounded. The ears are of moderate size. The facial line is straight, and the general form of the animal, being intermediate between that of the sheep and stag, is not devoid of elegance. The hair is like that of the reindeer, short, fine, and flexible, in its autumnal growth; but, as the winter advances, it becomes coarse, dry, and brittle, though still soft to the touch; it is necessarily erect at this season, from its extreme closeness. The limbs are covered with shorter hairs. In regard to colors, the head, buttock, and posterior part of the abdomen

are white; the rest of the body and the neck are of a pale amber, or dusky wood-brown. A deeper and more lustrous brown prevails on the fore part of the legs. The tail is dark brown, and a narrow brown line, extending from its base, divides the buttock, and unites with the brown color of the back. The colors reside in the ends of the hair, and, as these are rubbed off during the progress of winter, the tint becomes paler. The old rams are almost totally white in the spring. The horns of the female are much smaller and nearly erect, having but a slight curvature and an inclination backward and outward. The young rams and the females herd together during the winter and spring while the old rams form separate flocks, except during the month of December, which is their rutting season. The ewes bring forth in June or July, and then retire with their lambs to the most inaccessible heights. Where the hunters have not penetrated and have not annoyed them they are approached with some ease, but where they have been often fired at they are exceedingly wild, and, alarming their companions on the approach of danger by a hissing noise, they scale the rocks with a speed and agility that baffles pursuit. Their favorite feeding places are grassy knolls skirted by craggy rocks, to which they can retreat when pursued by dogs and wolves. The horns of the old rams attain a size so enormous, and curve so much forward and downward, that they effectually prevent the animal from feeding on level ground. The flesh of these sheep, when in season, was quite delicious, much superior to that of the deer species and exceeding in flavor the finest English mutton. The Indians esteemed it as food fit for the gods.

The dimensions of an old ram, killed early in this century on the south branch of the Mackenzie River, are given by Richardson* as follows:

	Feet.	Inches.
Length of head and body	6	0
Height at the foreshoulders	3	5
Length of tail	0	2
Length of horn, measured along its curvature	2	10
Circumference of horn at base	1	1
Distance from the tip of one horn to the tip of the other	2	3

A ram and ewe obtained by John Muir, near the Modoc lava beds, northeast of Mount Shasta, measured as follows:

	Ram.	Ewe.
	Ft. In.	Ft. In.
Height at shoulders	3 6	3 0
Girth around shoulders	3 11	3 3½
Length from nose to root of tail	5 10½	4 3½
Length of ears	0 4½	0 5
Length of tail	0 4½	0 4½
Length of horns around curve	2 9	0 11½
Distance across from tip to tip of horns	2 5½	.....
Circumference of horns at base	1 4	0 6

* "Fauna Boreali-Americana." John Richardson. London, 1829.

The measurements of a male obtained in the Rocky Mountains by Audubon vary but little as compared with the above. The weight of his specimen was 344 pounds, which is, perhaps, about an average for full-grown males. The females are about a third lighter.*

Mr. Muir, who has observed these wild sheep extensively in recent years, and who has given a valuable and interesting contribution to our knowledge of them, ranks them highest among the animal mountaineers of the Sierra. "Possessed of keen sight and scent, immovable nerve, and strong limbs," he ranged from one extremity of the lofty mountains to the other, crossed foaming torrents and slopes of frozen snow, exposed to the wildest storms, yet maintaining a brave, warm life, and developing from generation to generation in perfect strength and beauty. Compared to the best domesticated breeds, this wild sheep of the Rocky Mountains is more than twice as large; and, instead of an all-wool garment, the wild sheep wears a thick overcoat of hair like that of the deer, and an undercovering of fine wool, which is always white, and grows in beautiful spirals down out of sight among the straight shining hair like delicate climbing vines among stalks of corn. The coarse, soft, and spongy outer hair lies smooth, as if carefully tended with comb and brush. The more energetic Indians hunt these sheep among the more accessible of the California alps, in the neighborhood of passes, where, from having been pursued, they have at length become extremely wary; but in the rugged wilderness of peaks and cañons, where the foaming tributaries of the San Joaquin and Kings rivers take their rise, they fear no hunter save the wolf, and are more guileless and approachable than their tame kindred. Their feeding grounds are among the most beautiful of the wild gardens of the mountains, bright with daisies, and their resting places are chosen with reference to sunshine and a wide outlook, and, most of all, to safety from the attacks of wolves. They bring forth their young in the most inaccessible and solitary places, far above the nesting rocks of the eagle. Mr. Muir says he has frequently come upon the beds of the ewes and lambs at an elevation of from 12,000 to 13,000 feet above sea level. These beds he describes as simply oval-shaped hollows, pawed out among loose, disintegrating rock chips and sand, upon some sunny spot commanding a good outlook and partially sheltered from the winds that sweep those lofty peaks almost without intermission.

Such is the cradle of the little mountaineer, aloft in the very sky, rocked in storms, curtained in clouds, sleeping in thin, icy air; but, wrapped in his hairy coat and nourished by a strong, warm mother, defended from the talons of the eagle and teeth of the sly coyote, the bonnie lamb grows apace. He soon learns to nibble the tufted rock grasses and leaves of the white spiræa. His horns begin to shoot, and before summer is done he is strong and agile, and goes forth with the flock, watched by the same divine love that tends the more helpless human lamb in its warm cradle by the fireside.†

* The wild sheep of the Sierra, in "Sport With Rod and Gun." The Century Company, 1883.

† "Sport with Gun and Rod." The Century Co., 1883.

Efforts to domesticate the wild Rocky Mountain sheep have not been crowned with success. Some crosses between it and the domesticated sheep have been formed, but we are not aware that the progeny was fruitful or that the experiment was persisted in.

The Indians have been successful hunters of the wild sheep, killing them in great numbers for their flesh and skins; but the most dangerous enemy they have to encounter is the civilized man, who, with long-range rifle, hunts them for sport. Thanks, however, to the almost inaccessible feeding grounds which they inhabit, the wanton, criminal destruction that has overtaken the elk, the moose, and the buffalo has not seriously followed the footsteps of the free inhabitant of the Rocky Mountains.

A subspecies of the *Ovis montana* is found in Alaska, and has been named *Ovis montana Dalli*, or the Northern mountain sheep, sometimes called Dall's mountain sheep. This sheep differs from the *Ovis montana* in its nearly uniform dirty-white color, the light-colored rump area seen in the typical *montana* being entirely uniform with the rest of the body in *Dalli*. The dinginess of the white over the entire body and limbs appears to be almost entirely due to the ends of the hairs being commonly tipped with a dull rusty speck. On close examination this tipping of the hairs makes the fur look as if it had been slightly singed. This form also has smaller horns than its southern relatives, and it carries to the extreme the variations in the shape of the horn observable in the northern examples of the normal variety. In general form the Alaskan sheep is considerably smaller than its southern relative of the Rocky Mountains and Canada. It is quite as wild and difficult of approach, fleeing not only from the sight of man, but running the moment they catch wind of his presence.

The range of this sheep is limited to the higher mountains of the Territory, except in the extreme northern portion, within the Arctic Circle, where it ranges down nearly to the sea level. Following the main range of the Rocky Mountains, it is found in the southeastern part of the Territory, and north along those mountains to the point where the chain swings to the west, and along this western extension, known as the Alaskan range, it is numerous nearly to the head of Bristol Bay. In this portion of the mountains Dall's sheep is found upon the Pacific Slope as well as on the northern side. It is supposed to inhabit also the peninsula of Alaska, but has not been observed on any of the islands, being confined, apparently, to the mainland.

Owing to the absence of suitable mountains these sheep do not occur between the lower Yukon and Kuskoquin rivers, but inhabit the bluffs and high mountains along the Yukon River above Fort Yukon and across to the head waters of the Tanama, and north of the Yukon they are next found in the Romanzoff Mountains, from which point they range west to the Kariak Peninsula, near Bering Straits. They are also found abundantly along the courses of the Kowak and Nunatog

rivers, and thence northwesterly to the vicinity of the Arctic coast, near Cape Lisburne and elsewhere. The Kotzebue Sound Eskimo also claim that these sheep are very numerous up the Nunatog, and when asked where they are to be found they invariably point to the low range of mountains a few miles back from the coast. They also occur on the Siberian side of Bering Straits.

The flesh of this animal is eaten by the Indians; garments are made of its skin, and its horns are made into spoons, ladles, and ornaments of various kinds.*

From the material now in the National Museum at Washington, D. C., there is sufficient reason to the claim being valid that the Northern mountain sheep is entitled to rank at least as a subspecies. It is more than probable that it may prove, when additional information is obtained, of specific rank. The range of this mammal is even to the low hills of the interior lying as far north as latitude 68°, in this extreme range approaching just near the western coast. The southern limit has not yet been defined.†

Before leaving this extreme northwestern section of our country and continent, it may be remarked that when the United States came into possession of it the domesticated sheep was not known there, or was so rare in occurrence that it was not noticed by the early explorers and writers. Efforts to establish the breed in that country have not been crowned with success.

Impressed with the idea that certain sections of the Kadiak region would serve admirably for sheep husbandry, a San Francisco merchant firm shipped a flock of rams and ewes—one hundred of them—sheep of the hardiest breed, to Kolma, a spot not far from St. Paul Harbor, Kadiak. They were in charge of a trained Scotch shepherd; but while the flock did remarkably well in the summer, yet most of them perished during the following winter, not from exposure nor want of food, but the long continued and frequent intervals when the sheep are obliged to be shut up tightly from the fury of wintry gales laden with sleet and rain and snow causes their wool to sweat and fall from the skin in large patches, pfoducing an emaciation and debility from which the animal seldom fully recovers. Also, the general dampness everywhere under foot during the summer season in many good grazing sections of Alaska is such as to cause an abnormal increase of the hoofs, so that the horny toes turn and grow upward, destroying the peace and comfort of a sheep and literally confine its movements and destroy its thrifty life.‡

INTRODUCTION OF DOMESTICATED SHEEP.

The domesticated sheep were first introduced on the American continent by the Spanish discoverers and conquerors. On the second voyage of Columbus to the New World he stopped at Gomera, one of the

* Proceedings of U. S. National Museum, Vol. 7, 1884, and E. W. Nelson's Report on the Natural History of Alaska.

† "Contributions to the Natural History of Alaska." L. M. Turner, 1886.

‡ "Our Arctic Province." Henry W. Elliott, 1886.

Canary Islands, October 5, 1493, to take in a supply of wood and water. Here he purchased also calves, goats, and sheep, to stock the island of Hispaniola, and 8 hogs, from which, according to Las Casas, the infinite number of swine was propagated with which the Spanish settlements in the Western World subsequently abounded. His live stock was landed about the middle of December, 1493, at Isabella, where was founded the first Christian city of the New World. Vessels that followed from Spain from time to time, bringing supplies for the colonies, included sheep in their cargoes, which were landed at Hispaniola and Cuba. From these islands sheep were carried to the Isthmus of Panama, and in 1521 one of the conditions imposed upon those who proposed to found new settlements on that isthmus was that some responsible person was to come forward with whom an agreement for settlement could be made; and the terms were that "within a time specified there must be from 10 to 30 settlers, each with 1 horse, 10 milch cows, 4 oxen, 1 brood mare, 1 sow, 20 ewes of Castile, 6 hens and a cock."

On Cortes' return from Spain to the City of Mexico, in 1530, misunderstandings arose between him and the magistrates, and he left the capital in disgust, and took up his residence in the city of Cuernavaca, on the southern slope of the Cordilleras, overlooking a wide expanse of country, the fairest and most flourishing portion of his own domain. Here he devoted himself to agriculture and the improvement of a vast estate.

He introduced the sugar cane from Cuba, and it grew luxuriantly in the rich soil of the neighboring lowlands. He imported large numbers of Merino sheep and other cattle, which found abundant pastures in the country around Tehuantepec. His lands were thickly sprinkled with groves of mulberry trees, which furnished nourishment for the silkworm.*

From these two localities, Panama and the city of Cuernavaca, went forth sheep in great numbers, from which it was reported to the home government that much "woolen cloth was made in New Spain in 1560." These Spanish sheep were the progenitors of the immense herds in Mexico, New Mexico, Utah, and Texas. In 1736 there were over 1,500,000 sheep in the Mexican State of Nuevo Leon, and sheep-raising had risen to great importance because of the rapidly increasing woolen manufactures of Queretaro, Puebla, and Valladolid. Sheep formed the chief element of agriculture in New Mexico in 1750, these animals being raised in large numbers, both for wool and meat. Of the wool a coarse cloth was made, and the Indians became expert weavers.

Francisco Pizarro, early in January, 1531, sailed from the Bay of Panama on his third expedition for the conquest of Peru. After its subjugation Spanish sheep from Panama were taken to that country. We have no definite date, but from the following account by Garcilasso de la Vega, it was before 1556. Garcilasso wrote in 1600:

The sheep of Castile, which we call so to distinguish them from those of Peru, to which the Spaniards improperly give the name of sheep, since they are neither like

* "History of the Conquest of Mexico." William H. Prescott.

them in shape, nor color, nor anything else, as we have shown in due place; these sheep, I say, of Castile, I know not when they were first imported into Peru, nor by whom. The first that I ever saw were in the fields about Cusco, in the year 1556, and were then sold, one with another, at the rate of 40 pieces of 8 a head ($40), and some of the prime at 50; and were brought there both for love and money, as the goats first were. In the year 1560, when I departed from Cusco, mutton was not as yet sold in the shambles by weight, but since, in letters from there, dated in the year 1590, they write me that a sheep was then sold in the market for 8 reals of 8, or 10 at most; and in eight years since sheep are fallen to 4 ducats a head and under, and now, at present (1600), are so common, and in such numbers, that they are worth very little; for an ewe commonly brings forth two at a time, and often three; their wool is produced in that quantity, that it is of little value, and is not worth above 3 or 4 reals a quarter of a hundred. I know not if they have learned to make wethers of them.

Other Spanish writers on Peruvian affairs state that the first cows, bulls, horses, goats, and other European animals, of course including sheep, were brought across the Isthmus of Panama to the upper coast of the Pacific, originally, from the islands of San Domingo and Cuba, whither the breeds had been sent from Spain for the purpose of propagating. From Peru the Castilian sheep were introduced into Chile, about 1550, and soon became general, but more esteemed by the European settlers for their flesh than their wool, and in small numbers considered as a necessary appendage to every estate where the language of the mother country was spoken in the mansion. The Castilian sheep bred upon the lowlands of Chile are very different from those located on the uplands. Below, they grow into long-legged and long-backed animals with small bodies. Comparatively speaking, the mutton is also poor and the wool coarse and long, whereas, on the mountains the meat is well flavored, with something of a game taste, and the fiber of the fleece is finer.

From the same original depot in Peru the Castilian sheep were driven to Chuquisaca, and thence across the South American continent to Paraguay, and eventually to the extensive plains bordering upon the long stream of La Plata.

When, in 1565, Menendez made his contract with Philip the Second, King of Spain, to conquer and colonize Florida in three years, he agreed to take with him 500 men, and to supply them with 500 negro slaves, 200 horses, 200 cattle, 200 hogs, and 400 sheep. Menendez proceeded to raise the necessary funds for the purpose, in which he was still further hastened by the news that Florida was occupied by French Huguenots. He sailed for Florida in June, 1565, with a fleet of eleven ships, leaving many other ships, with men and stores, to follow. On September 4 he anchored off the mouth of St. Johns River, and, after chasing some French vessels next day, sailed down the coast to an inlet, which he named San Augustine. Here three of his ships debarked troops, guns, slaves, and stores. The negro slaves were immediately set at work with pick and shovel and spade to provide intrenchments, "and," says Parkman, "such was the birth of San Augustine, the oldest town of

the United States, and such the introduction of slave labor upon their soil." Spanish sheep were among the stores landed; how many is not known. From that day until Florida passed into the possession of the United States Spanish sheep were, at various times, introduced into the province, and to-day, in some parts of the State and in southern Georgia, the sheep preserve traces of their Spanish origin.

Spanish sheep were introduced into California in 1773, and, under the care of the Catholic priests in charge of the missions, increased rapidly, and woolens were made of a coarse kind. Vancouver, who visited the coast in 1792, says:

> The looms, though rudely wrought, were tolerably well contrived, and had been made by the Indians. The produce is wholly applied to the clothing of the converted Indians. I saw some of the cloth, which was by no means despicable, and had it received the advantage of fulling, would have been a very decent sort of clothing.

Diego de Borico, governor of California from 1794 to 1800, made a special effort in 1796–'97 to promote the raising of sheep in connection with the manufacture of cloth, and laws were enacted providing that good sheep be selected and propagated. Two hundred were distributed at Los Angeles in 1796. Every settler at San Jose was required to keep three sheep to every other animal. The breed at San Francisco was Merino, and better than elsewhere, and had increased in numbers from 1,700 in 1790 to over 6,000 in 1797. In 1797 Borico ordered that blankets made at the missions should be used at the Presidio, and no more obtained from Mexico; but in 1799 he disapproved of the friars' scheme of building a fulling-mill.

The extent of sheep husbandry conducted by the Catholic priests at the missions may be realized when it is stated that at seventeen of these establishments, located on a line near the seacoast and extending from San Diego to San Francisco, a distance of 500 miles, there were, in 1825, the period when the missions were at the height of their prosperity, an aggregate of 1,003,970 sheep, not including flocks of sheep owned by the ranchers, which were quite as numerous as those possessed by the church.

Old writers, and those who base their statements on old authorities, speak of these sheep first introduced into Mexico, Florida, and California as the Merino sheep, sheep of Castile, or the best sheep of Spain, but some recent writers affirm that they were not the Merino but the common sheep of Spain. George W. Bond, in a communication to the Boston Society of Natural History, May 17, 1876, stated that he had found indubitable confirmation of the opinion that the sheep of Spanish America, both North and South (with possibly some admixture from Chile), originated from the *churro*, or coarse sheep, of Spain, and not from the Merino. The churros are, according to Lasteyrie, larger, longer, and higher upon the legs; they have a head smaller and more tapering; these parts of their body (legs and head) are without wool; they are of a robust habit; they are more easy to nourish; they bear

hunger and the inclemency of the seasons better; the wool is straight and longer, much less fine, and much inferior in value. An examination of the native wool from the various parts of South America gives evidence of a descent from two different classes of sheep, from which it is inferred by some that one class has descended from the Merino, degenerated, it is true, and the other class from the long-legged churros, or common sheep, of Spain.

VIRGINIA.

Jamestown, Va., was settled in 1607, and in August, 1609, the London company provided the colonists with sheep. How many is not known, but when John Smith, later in the year, sailed for England, it is stated that there were in the colony "6 mares and a horse, 500 or 600 swine, with some goats and sheep." The sheep did not increase very rapidly, or were largely destroyed by wolves, for in 1648 the number in the whole colony was only 3,000, but producing good wool, it is said. In 1657 it was enacted "that no mares nor sheepe be transported out of the collonie upon such penalties as shall be thought fitt by the governor and council," and in 1662, Virginia, by statute, prohibited the exportation of wool, and as an encouragement to the raising of sheep and the establishment of manufactures offered 5 pounds of tobacco (at that time Virginia currency) for every yard of woolen cloth made in the colony, 10 pounds for every good hat made of wool or fur, and for every dozen pair of woolen or worsted stockings. In 1664, because of the "nakedness of the country," occasioned by the low price of tobacco, caused by overproduction, and the failure of all efforts to raise the price, and also in order to diversify industries, the general assembly established in each county looms and weavers, each county at its own expense to set up a loom and provide a weaver, and in 1668, for the better converting of wool, flax, and hemp, the commissioners of the county courts were empowered to build houses for educating poor children in the art of spinning and weaving, and they were likewise authorized to set at this work all children of indigent parents.

The various acts for the improvement of the sheep and iron industry could not alienate the Virginia colonist from the continued culture of tobacco, and in September, 1671, this repealer was put on the statute book:

Whereas it was hoped that weavers, tanners, and smiths would have been encouraged with greater diligence and cheerfulness to have improved their several callings for the good of the country when they were sencible what tender care was taken for supplying them with materials for to work upon, in reference to which the exportation of wool, hides, and iron was, by an act of assembly (continued the three and twentyeth of March, 1661-2) and under great penalties prohibited, and that act strengthened by diverse others since, but noe successe answering the conceived hopes and apparent losses accruing to all inhabitants by the refusal of those concerned to buy the commodytes aforesaid * * * all acts tending to the restriction of selling or exporting of any of the aforesaid commodities stand repealed and everyone permitted to make the best he can of his owne commodity.

In 1682 it was found by experience that wool, wool felts, skins, hides, and iron were very necessary and profitable for the support of the country, and that it would be found

profitable for the setting to work of many men, women, and children which lye idle for want of employment, and for the better setting to work the poorer and weaker sort of people of this country, and to the intent that the full and best use of such principal native commodities may come and redound, and be unto and amongst the inhabitants of the same, it was enacted that neither wool, hides, nor iron should be exported under heavy penalties.

And it was further enacted that for the "better and further encouragement for the working up our wool into cloth" that every person making a yard of woolen cloth or *linsywoolsy*, three-fourths yard wide, should have 6 pounds of tobacco, and for every well-wrought hat made of wool or furs 10 pounds of tobacco, and for every dozen pairs of men's or women's woolen or worsted hose 12 pounds of tobacco. This law was to remain in force until November 10, 1685. About the same time the price of wool was fixed at 8*d.* per pound, washed before shearing. The act of 1682, giving premium on manufactures of wool, hides, and iron, was repealed in 1684.

When England imposed an excise on tobacco, Virginia, in 1687, attempted to retaliate by passing acts for the encouragement of domestic manufactures, including those from wool, but these acts were disallowed by the English king as "hostile to English interests." In April, 1691, the assembly put an export duty on wool of sixpence a pound.

John Clayton, who wrote of Virginia's products in 1688, says: "Their sheep are a middling size, pretty fine fleeced in general, and most persons of estate begin to keep flocks which hitherto has not been much regarded, because of the wolves that destroy them; so that a piece of mutton is a finer treat than either venison, wild goose, duck, widgeon, or teal."

Andros, who was governor from 1692 to 1698, was a patron of manufactures, and in 1692 approved acts for establishing fulling mills, which, however, were rejected by the English government. Governor Nicholson, who succeeded Andros in 1698, was not so favorably inclined to manufactures of any kind, and it is asserted by Beverly that, instead of encouraging them, "he sent over inhuman and unreasonable memorials against them," and that while he represented their tobacco crops as insufficient, from its low price to produce them clothing, he recommends Parliament "to pass an act forbidding the plantations to make their own clothing," which, in other words, is desiring a charitable law that the planter shall go naked.

Beverly, writing early in the eighteenth century, regrets the dependence of Virginia upon the mother country for nearly everything, including clothing, and criticises the indisposition of the assemblies to give that encouragement that it had formerly bestowed. "They have clothing of all sorts from England, as linen, woolen, and silk, hats and

leather. * * * Their sheep yield good increase and bear good fleeces; but they shear them only to cool them."

Wolves had for years been destructive to the sheep, and numerous statutes provided rewards for their extermination, of which one enacted in 1697 is a sample: "That whereas it is too evident that wolves do greatly increase, and are very distructive to the increase of most sorts of useful creatures in this country," it was provided that 300 pounds of tobacco be given for each one killed.

Notwithstanding the assertions of Beverly that the Virginians depended upon the mother country for clothing, and made no use of wool save to take it from the backs of the sheep to cool them, there is not wanting evidence that domestic or homespun manufactures were increasing, so much so that in 1708 Edmund Jennings, deputy governor of Virginia, wrote to the home government that the consumption of imported clothing was diminishing, and the manufacturing spirit of the colonists increasing, and he hoped the English merchants would so far see the general interest of the nation as well as their own as to send in continued supplies of clothing—

which will be the only effectual means to take off the inhabitants of this country from going on woolen and linen manufactures of their own. It was necessity that forced them at first upon this course, but the benefits they have found by it, in the late scarcity of goods and the experience they have gained therein, seems to have confirmed in them too great an inclination to continue it, insomuch that this last year, in some parts of the country, the planting of tobacco has been laid aside and the improvement of the manufactures of cotton, woolen, and linen followed with an unusual alacrity and application.

An English writer who had traveled in America, and more particularly in Virginia and Georgia, observed, in 1767, that the wool of North America was better than the English, at least in the southern colonies; that it was of the same kind with the Spanish wool, or curled and frizzled like that, and might be rendered as fine by the same management:

Sheep likewise maintain themselves in the southern colonies without cost or trouble throughout the year. They have already made cloth, worth 12 shillings a yard, which is as good as any made of English wool. Some of their wool has been sent to England, where it sold for the best price. If the Spaniards should manufacture their own wool, England may be supplied from America.

This statement was overdrawn as to the quality of Virginia wool. It certainly was not as fine as Spanish wool, nor was it as good as the English, but it was of medium fineness and susceptible of improvement. There were some superior sheep on the plantations of opulent farmers or planters, some that had been brought over from England in trading vessels, others that had been brought from the West Indies; but as a rule the sheep were very indifferent, white, black, and piebald, yielding wool of a very varied quality and light in the fleece. Just before the war of the Revolution more attention was given to sheep and slight improvement began.

MARYLAND.

Sheep were taken to Maryland at its first settlement, of the same general character as those raised in Virginia, and they had similar treatment. Their flesh formed a good part of the food for the people, and their wool was used in homespun manufacture. Though having nearly 8,000 people, with a trade employing 140 ships in 1650, there was yet no home manufacture of cloth, nor any attempt in that direction for nearly fifty years after, the supplies—except homespun, of which most families made more or less—being derived from England in return for tobacco, or from New England in exchange for grain and other provisions. It would appear that wool was exchanged also, for in 1663 the colonial assembly found it necessary to pass an act against its exportation, and in 1682 bounties payable in tobacco were authorized for the encouragement of growing flax, hemp, and wool. Necessity turned the minds of the people to manufacturing. A murrain among the stock in 1694–'95 cut off 25,000 neat cattle and upwards of 62,000 hogs, thus diminishing their resources for trade, and at the same time there was an increasing difficulty in getting supplies. These circumstances threw the colonists, in a measure, upon their own resources for clothing. Sheep were plentiful, and the wool was comparatively good, and two years later, in 1697, an effort was made in the counties of Dorchester and Somerset to introduce the woolen and linen manufacture, but it succeeded only in attracting the reproachful attention of the English Government and was soon abandoned, the colonial assemblies pleading in excuse of the weavers that they were driven to their tasks "by absolute necessity." In 1750 the sheep of Maryland were nearly all of one breed, of which not one could be found in 1800. They were light made and clear boned, giving at four and five years old the best flavored mutton, dark, rich, and juicy. The wool was in but moderate quantities, yet of good quality. They were called rat-tailed sheep, from the tail being small and round.

NEW YORK.

The first sheep imported into New York or the New Netherlands were brought from Holland by the Dutch West India Company in 1625, when the Dutch colonists were "gladdened by the arrival of two large ships freighted with cattle and horses, as well as swine and sheep," but the charter of 1629 forbade the colonists to manufacture any woolen fabrics; "not a web might be woven nor a shuttle thrown, on penalty of exile." To impair the monopoly of the Dutch weavers at Amsterdam was punishable with severe and heavy penalties. Under these circumstances there was no encouragement for raising sheep.

Sheep were brought from Zealand and Texel to Rensselaerswyck in 1630. But little progress was made in sheep-raising on the Hudson for many years, in consequence of the ravages committed by dogs and

HAMEL, DEL.

TEXEL SHEEP.

FROM "CONCOURS D'ANIMAUX REPRODUCTEURS," VOL. II, 1856.

wolves; in fact the enterprise was almost abandoned and the sheep nearly all destroyed. In 1643 there was not over a score of sheep in the colony; in 1650 they were so scarce that a bearing ewe was worth from $8 to $10, an extravagant sum in those days. On May 18, 1654, the directors at Amsterdam wrote to the director-general at New Amsterdam that an edict had been passed for the promotion of the increase of sheep, but the act is not to be found among the colonial records.

The sheep from Zealand and the Texel were of that kind then prevailing along the borders of the German seas before their improvement by the introduction of the Guinea sheep of West Africa and the Barbary States. Those sheep were of large frame, capable of taking on much fat, had long legs, and yielded a fleece of 2 or 3 pounds of coarse wool well suited to the manufacture of blankets and common cloth. An early writer thus speaks of the sheep of the New Netherlands as they appeared in 1650:

Sheep are also kept in the New Netherlands, but not as many as in New England, where the weaving business is driven and where much attention is paid to sheep, to which our Netherlanders pay little attention. The sheep thrive well and become fat enough. I have seen mutton so exceedingly fat there that it was too luscious and offensive. The sheep breed well and are healthy. There is also good feeding in summer and good hay for the winter. But the flocks require to be guarded and tended on account of the wolves, for which purpose men can not be spared. There is also a more important hindrance to the keeping of sheep, which are principally kept for their wool. New Netherlands throughout is a woody country, being almost everywhere beset with trees, stumps, and brushwood, wherein the sheep pasture, and by which they lose most of their wool, which by appearance does not seem to be out, but when sheared turns out light in the fleeces. These are reasons against the keeping of sheep.

This writer then proceeds to give reasons why the inhabitants keep more goats than sheep, which succeed best:

Fat sheep are in great danger, when suffered to become lean; of goats there is no danger. Goats also give good milk, which is always necessary, and because they cost little, they are of importance to the new settlers and planters, who possess small means. Such persons keep goats instead of cows. Goats cost little, and are very prolific; and the young castrated tups afford fine delightful meat, which is always in demand.*

The early orders against weaving were so severe that but little progress was made in domestic manufacture, though Dutch matrons were proud in their display of blue, red, and green worsted stockings. Denton, in his history (1670), says that the inhabitants did much weaving: "Everyone make their own linen and a great part of their woolen cloth for their ordinary wearing."

Governor Cornbury informed the home government, in 1707, that making woolen goods had been brought to great perfection in the province, and he thought it would be a great prejudice to England in a few years and ought to be taken care of in time. "They already make good serges, linsey-woolseys, and in some places they begin to make coarse

*"Description of the New Netherlands." Adriaen Van der Donck, 1650.

cloth." Caleb Heathcote, in 1708, wrote to the board of trade that the people were so far advanced that three-fourths the linen and woolen they used were made among them. This increase in the woolen manufacture was not pleasing to the English Government, so when it was proposed to settle upon the waste lands of New York some of the expatriated people of the German Palatinate, many of whom were weavers, there was an apprehension that expressed itself in the records of August 30, 1709:

It may be objected should these people (Palatines) be settled on the continent of America, they will fall upon woolen and other manufactures to the prejudice of the manufactures of this Kingdom now consumed in these parts. To this we answer that the province of New York, being under Her Majesty's immediate government, such mischievous practice may be discouraged and checqued much easier than under any proprietary governments on the said continent, as has been found by experience; and as a further provision against any such practice a clause may be inserted in the several patents so as to be passed and the said Palatines declaring the same to be void, if such Palatine shall apply himself to the making the woolen or such like manufactures.

The suggestion was adopted, as shown by the following:

That the governor be likewise directed to grant under the seal of that province, without fee or reward, 40 acres per head to each family, after they shall have repaid by the produce of their labor the charges the public shall be at in settling and subsisting them there, in the manner as hereinafter proposed; to have and to hold the said lands, to them and their heirs forever, under the usual quit-rent to commence and be payable after seven years from the date of each respective grant; and further that in every such grant there be an express proviso that the lands so granted shall be seated and planted within a reasonable time, to be therein prefixed, or in failure thereof such grant to be void and revert to the Crown; and for the better preventing those people from falling upon the woolen manufactures, it will be proper that in every such grant a clause be inserted declaring the said grant to be void if such grantee shall apply himself to the making the woolen or such like manufacture.

In 1715 Governor Hunter recommended the same means as his predecessors to divert the people from the manufacture of cloth, of which the country people chiefly wore the product of their own looms; but, as it was well known that imported goods were accounted cheap at an advance of 100 per cent on the cost, to compel them to wear such would be too severe an expedient. He had never known the homespun to be sold in the stores.*

In 1746 the governor of New York reported to the English Government that the country made and had made their homespun, so termed, of flax and wool, to supply themselves with the necessaries of clothing, and, in 1767, Governor Moore reported, in answer to what manufactures had been carried on since 1734, that it did not appear that there was any established fabric of broadcloth in the province, and that some poor weavers from Yorkshire, who came over lately in expectation of being engaged to make broadcloth, could find no employment. But there was a general manufacture of woolen carried on which consisted

*Bishop's History of American Manufactures.

of two sorts, the first a coarse cloth entirely woolen, three-fourths yard wide, and the other a stuff called linsey-woolsey. The warp was woolen and the woof linen, and but a very small quantity of it was ever sent to market. The custom of making coarse cloths in private families prevailed throughout the whole province, and almost in every house a sufficient quantity was manufactured for the use of the family, without the least design of sending any of it to market. Every house swarmed with children, who were set to work as soon as they were able to spin and card, and as every family was furnished with a loom the itinerant weavers who traveled about the country put the finishing hand to the work.

NEW JERSEY.

In the neighboring province of New Jersey sheep were introduced by Swedes, first in America of those increasing masses which now bid fair to make the offspring of the Scandinavian races more numerous in America than in their original homes in Norway, Sweden, and Denmark.

In 1634 the scattering Swedish settlements in the Delaware had a few sheep, and under good care their flocks increased and multiplied.

In 1642 the counsellors of the young Queen Christiana, of Sweden, in giving instructions to Governor Printz, who was about to plant another colony on the banks of the Delaware, said:

> Among other things he shall direct his attention to sheep, to obtain them of good kinds, and as soon as may be, seek to arrange as many sheepfolds as he conveniently can, so that presently a considerable supply of wool of good quality may be sent over to this country.

In 1693 a letter from one of the colonists to friends in the old country said: "Our wives and daughters also busy themselves much in spinning both wool and flax; many also with weaving." Wool at that time was comparatively cheap.

The Quakers from Yorkshire and London, who settled Salem and Burlington counties in West Jersey in 1677, with a population second to none for morality and industry, soon commenced the manufacture of cloth, and in 1697 an English writer informs us that they made "very good serges, druggets, crapes, camblets (part hair), and good plushes, with several other woolen cloths, besides linnen."

Mutton was fat, sound, and good, being only fed with natural grass, and the profit of raising sheep was considerable. They were not subject to the rot, and the ewes commonly, often the first time, brought two lambs at once. The wool was good, but not enough raised to supply the manufacture, for which purpose considerable quantities were purchased from Rhode Island and other adjacent places at 6 pence a pound.

East Jersey was not so forward as West Jersey, though sheep were quite plentiful at the end of the seventeenth century, and every farm had its small flock to supply the spinning-wheel and deck the family in

good homespun clothes. The sheep were mostly of the kind raised in New York. In February, 1703, John Clarke received a grant of 20 acres of land on the southern branches of the Rahway River "for his encouragement in fitting up a fulling-mill" in that part of the province. This is supposed to have been the first fulling-mill set up in the limits of the State of New Jersey.

As in New York and the New England colonies, so in east and middle Jersey, the industries of the family were of the most complete character, and each homestead produced enough to supply the necessities of all the members. In farming communities the women of the household made all their own garments, and most of those worn by the men; spun their own yarn from the wool of their own sheep, wove the family linen and woolen goods, and at spinning parties supplied the minister and his family with their winter's outfit. Oaken cases in the roomy garrets were filled to bursting with woolen outer garments, woolen petticoats, woolen stockings, and woolen caps and tippets. After the family wants and those of the minister were supplied, the surplus was taken to the nearest town and either bartered for other goods or put in the hands of storekeepers to be sold on commission.

The breeds to which the early sheep of New York and New Jersey belonged are not certainly known, but they were doubtless varied, depending particularly on what part of the Old World the settler came from, the Swedes probably bringing the indifferent, long-legged, long-bodied sheep of their homes; the Dutch the sheep of Friesland and the Texel, while the English brought those of the country adjoining the ports from which they sailed. As the two provinces passed under the English rule, English sheep gained the ascendency, and the Swedish and Dutch sheep had nearly disappeared at the end of the seventeenth century. A writer early in the eighteenth century says of the sheep of New York and New Jersey:

> They are of the large English sort. They are washed whenever convenient, and then immediately shorn, once a year, towards the end of April. Their wool is regarded as better for stockings than the English. The flesh is generally very strong in its taste, especially in old sheep. Some persons are unable to eat it.

Great improvement was made upon the sheep thus described, especially in New Jersey. Lying between the two cities of New York and Philadelphia, whose markets demanded good mutton, the country adjoining them soon yielded a good table meat. Indeed, it is very doubtful if at that day the mutton of Gloucester, Burlington, and Salem counties could be equaled anywhere in the colonies, nor could it be greatly surpassed in England. The wool improved with the flesh, but, like the wool of other colonial flocks, was certainly only adapted to the coarser purposes to which it was applied in the household manufacture of plain, strong fabrics for common wear. There was a great diversity in the sheep of the two provinces, diversity when the provinces were compared with each other, and diversity when counties of the same

province were compared, but it may be stated in general terms that these old sheep, so strong in taste that some persons could not eat them, were the progenitors of the stock of common sheep in the middle colonies about 1800, known as "native sheep," which by continued admixture probably contained the blended characteristics of the several originals, still further modified by crosses with smuggled importations made between 1783 and 1799.

PENNSYLVANIA.

It is uncertain when sheep were introduced into the colony of Pennsylvania; presumably, it was at its first settlement, for William Penn, in August, 1683, writing to the Free Society of Traders, says the colony had no want of horses, some of which were good and shapely enough; two shiploads of them had gone to Barbadoes, and they had also "plenty of cow cattle and some sheep."

Among the first branches of industry that Penn sought to ingraft upon his new colony was the manufacture of linen and woolen cloth. One of his first legislative acts, after his arrival in 1682, was to invest with all the right of citizenship the Dutch, Swedes, Finns, and other foreigners—amounting to about 3,000—then in possession of the country. To furnish a ready market for the domestic products of his people, especially woolen and linen, fairs were at once established, to be held at stated times, in several of the towns, where the people were brought together for the purposes of trade.

Sheep, for the support of this industry, multiplied exceedingly by the end of the century, and in 1698 fulling-mills were erected to treat the wool, and woolen stuffs are mentioned as one of the domestic or household manufactures, and ten years before this (1688) weavers, spinners, and dyers were in demand; spinning worsted being paid for at 2 shillings per pound, and knitting coarse wool stockings half a crown a pair. Wool combers or carders received 12 pence per pound; the pay of journeymen tailors was 12 shillings per week and "their diet." The earliest mention of stocking weaving is in 1723, when one Matthew Burns, of Chester County, Pa., is mentioned as having served John Camm one or two years at stocking weaving, during which time Camm's stockings obtained some repute. In 1730 it was estimated that the farmers made nine-tenths of their own wearing apparel from the hemp, flax, and wool of their farms, and in addition to this homespun manufacture, wool and flax were brought from Maryland and Virginia. At this time Stephen Atkinson was erecting a fulling-mill at Lancaster, and many were in operation at Columbia, Ephrata, and in Chester and Bucks counties, and other parts of the province. Wool was less abundant in Pennsylvania and the southern provinces than in New York, New Jersey, and New England, because for articles of clothing they paid more particular attention to the raising of flax, hemp, and cotton.

At the end of the century the Pennsylvania sheep were of a mixed variety, descended from various English breeds; they were generally smaller. The average weight of the sheep, when fat, did not exceed 48 pounds net. Some were known to run up to 112 pounds, and an exceptional one was known to have reached 130 pounds. The weight of the quarters may be judged from that of the whole. The common run of good sheep in the Philadelphia market weighed 60 pounds, but 80 pounds the carcass was not uncommon. The price of mutton in that market the year through was about 4½ cents, and the price of sheep in flocks, when poor, about $1. The mutton from the hilly lands was the best. The smaller size, if well fatted, was the sweetest and best flavored. It was considered better than the large English or German mutton, and not inferior to the mutton of Wales. The best-flavored mutton did not reach the Philadelphia market; the largest and fattest was to be found there, but the choicest and finest meat was only to be had at a distance, in the neighborhood of hilly or relatively barren countries. The heaviest known fleece weighed 13 pounds net. The price of wool upon an average was an English shilling per pound, and 3 pounds to a fleece was about the average. Homespun cloth was good; some of it was equal to English superfine; but most of the wool was only calculated for the coarser kinds of cloth. These were manufactured to great perfection and would outlast any imported. Few of the sheep kept their prime longer than seven years. The average weight of tallow was about one-eighth of the carcass, if the sheep was well fatted. The time of yeaning was generally from the middle of February to the end of May. It was rare for a ewe to lamb twice a year. The fleeces were clipped once a year, in May or June, and sometimes the early lambs were sheared in July or in the beginning of August, but this was not generally done.

DELAWARE.

Sheep were introduced into this province by the Swedes at their first settlement, and wool was an important and indispensable article of household economy. The sheep were of the same kind first introduced into New Jersey, and, like them, gave way eventually to the English sheep, although the Friesland sheep are believed to have maintained their hold until quite a late day. Rochefoucauld says of them in 1797:

> The sheep of this country produce good wool, fine and short, but the fleece seldom weighs more than 3 pounds; it is worth $1.50. The sheep have long legs and very large bones. The breed might be much improved by a little attention, of which it is well deserving.

Here, as elsewhere in Maryland, Pennsylvania, and New Jersey, the owner left at the end of the tail a bunch or tuft of wool, like the tail of a lion. This was a matter of taste and to enable the sheep to keep away the flies.

MASSACHUSETTS.

English sheep were probably brought into the plantations of Massachusetts Bay between 1624 and 1629, for we are told that Edward Winslow brought the first neat cattle into New England in 1624, and it is reasonable to infer that sheep accompanied them. In 1629 royal permission was given to ship from Southampton, England, 140 cattle, horses, sheep, and goats to Massachusetts Bay, and early in the spring of 1630 eleven vessels, having on board 1,700 persons, with live stock, left the harbor of Southampton for New England. Most of the emigrants were farmers, and settled at Lynn, Charlestown, Roxbury, Dorchester, Watertown, Medford, and Boston, and from the time of their arrival sheep begin to be mentioned in the records. Many went to Lynn, principally farmers, and possessed a large stock of horned cattle, sheep, and goats. The sheep, goats, and swine were kept on Nahant, where they were tended by a shepherd. Wolves were very destructive, and, November, 1630, the court ordered that to any person killing one should be allowed a penny for each cow and horse, and one farthing for each sheep and swine in the plantation. This indicates that sheep were at that time known throughout the colony, and were protected by an assessment upon them for the destruction of their greatest enemy in those early days, and they became objects of solicitous care. How many were landed that were shipped at Southampton does not appear. They were, generally speaking, well-formed sheep, bearing wool of a medium fineness, compared with that of the present day, and of a superior quality for that time. From the place of shipment and their general characteristics, as gleaned from historical records, we judge that the first sheep of Massachusetts were the ancient Wiltshires, a horned sheep, with large head and eyes, Roman-nosed, long-faced, wide nostrils, horns falling back behind their ears, chest wide and deep, back straight, legs long, and bones large. They were greedy feeders and slow in fattening, but when fattened they occasionally attained great weight. If they were slow in feeding they were excellent folding sheep, and enabled more corn to be grown in Wiltshire, in proportion to its size, than in any other county in England, and to this purpose they were used by the early settlers of Massachusetts. More valuable, however, than anything was the wool, and this alone would have caused choice of the Wiltshire for the new settlements. The Wiltshires were the largest breed of fine-wooled sheep, and their wool at that time much prized; it was of a medium length and fine, and the fleece weighed from 2 to 2½ pounds. The ewe had no wool beneath the belly.

In July, 1631, there were shipped from Barnstable, in Devonshire, eight heifers, a calf, and five sheep. In 1633 the general court leased Noddles Island to Samuel Maverick for "a fat hog, a fat wether, or 40*s.* in money each year," and Maverick raised sheep on the island, and the Boston records of the same year make mention of keeping the sheep

on the islands in the harbor to protect them from the Indians and wolves. On June 15, 1633, thirty-four Dutch sheep were landed, forty having been lost at sea; and in 1635 two Dutch schooners brought into the colony twenty-seven Flanders mares at £34 each, sixty-three heifers at £12, and eighty-eight sheep (ewes) at 50*s.* each. These Dutch sheep were rather large, white faced, no horns, long legged, and with a light fleece. They were of mixed Holland and English origin, from the lowlands of Holland and the Texel. They were similar to, if not identical with, those introduced into New York four or five years previous.

On May 5, 1634, quaint Obadiah Turner, of Lynn, records in his diary: "And wee doe hope soone to have plentie of sheepe, too, for wool as well as for meate. And our women can do ye spinning and weaving."

By the inventory of Piscataqua and Norridgewock, in 1635, it is shown that these settlements contained ninety-two sheep, and in 1640 they numbered about one thousand in the whole colony. Capt. Edward Johnson in his "Wonder Working Providence," says that there were twelve thousand neat cattle, and three thousand sheep at this time; that previous to this Watertown had "some store of sheepe and goates." Cambridge had "cattle neate and sheepe, of which they have a good flocke, which the Lord hath caused to thrive much in these latter days," and of Concord, in 1636, "as for those who laid out their estate upon sheepe they sped worst of any at the beginning (although some have sped the best of any now), for untill the land be often fed with other cattell sheepe can not live."

In 1641 beef, pork, and mutton were plenty in many houses, and "for rayment the Lord hath been pleased to increase sheepe extraordinarily," and for cloth material enough to make it.

Homespun manufactures had been carried on to some extent before this time, for the records of the probate court of Suffolk County give instances of spinning-wheels and small quantities of homemade cloth as being inventoried among other articles. In 1642 there were flax, hemp, and wool enough to furnish the people clothing, and on September 26, of this year, the author of "New England's First Fruits," writing at Boston, says:

> And having a matter of one thousand sheep, which prosper well to begin withal, in a competent time we hope to have woolen cloth there made. And great and small cattle being now very frequently killed for food, their skins will afford us leather for boots and shoes and other uses; so that God is leading us by the hand into a way of clothing.

The writer's hopes were soon realized, for in the next year, 1643, a fulling mill was erected at Rowley, between Ipswich and Newbury, "by Mr. Rogers' people, who were the first that set upon making cloth in this western world." Rowley was settled in 1638 by about twenty families of industrious and pious people from Yorkshire, England, many of whom had pursued the woolen manufacture in the old country. The

town was incorporated in 1639, and soon after this was commenced the manufacture of cloth. Although these Rowley people were from the woolen districts of England, especially the seat of the broadcloth manufacture, flax and cotton, as well as wool, appear at first to have formed a considerable part of their raw materials. But although after the introduction of fulling-mills much of the woolen cloth of household manufacture was worn in its unfulled and unfinished state, the mention of the Rowley people as the first cloth-makers must be understood to imply the first manufacture of fulled and dressed cloth, or cloth wholly of wool, of which none was previously made. Maverick, in 1660, describes these Yorkshire men of Rowley as a very laborious people, who "drive a pretty trade, making cloath and ruggs of cotton wool, and also sheep's wool, with which in a few years the country will abound not only to supply themselves but also to send abroad. This town aboundeth with corne and cattle, and has a great number of sheep."

In May, 1645, two years after the erection of the first fulling-mill at Rowley, the general court of Massachusetts made an order for the care and increase of sheep, not only for the supplying of their wants, but with a view to trade in other parts. It said:

Forasmuch as woolen cloth is so useful a commodity, etc., by reason of the cold winters, and being at present scarce and deare, and likely soon to be so in parts where we can expect to get it, by reason of the wars in Europe destroying the flocks of sheepe, and killing and hindering the trade of those whose skill and labor tend to that end, and as for want of woolen cloth many poor people have suffered cold and hardship and impaired their health and some hazarded their lives, and those who had provided their families with cotton cloth (not being able to get the other) have by that means had some of their children much scorched by fire, yea, divers burnt to death; this court, therefore (taking into consideration our present condition in that particular, as also having an eye to the good of posterity, knowing how useful and necessary woolen cloths and stuff would be for our more comfortable clothing, and how profitable a merchandise it is like to be to transport to other parts), doth hereby desire all towns in general and everyone in particular within the jurisdiction, seriously to weigh the premises, and accordingly, that you will endeavor the preservation and increase of such sheepe as they have already, as also to procure more with all convenient speed into the several towns by all such lawful ways and means as God shall put into their hands, and for the better effecting thereof, we thinke meete it to be appointed to each several town, being assembled together to know who will buy ewe sheep at the rate of 40s. apiece, under three years old, and appoint one in each town to take the names and return them by the 7th next month to Mayor Gibson, his house in Boston; and further it is desired that those having friends in England desiring to come, would write them to bring as many sheepe as convenient with them, which being carefully endeavored, we leave the success to God.

On May 14, 1648, the general court made an order—

That forasmuch as the keeping of sheepe tends to the good and benefit of the country, if they were carefully preserved, henceforth it shall be lawful for any man to keepe sheepe in any common, accounting five sheepe to one great beaste, and if any dogge shall kill any sheepe the owner shall either hange his dogge forthwith or pay double damages for the sheepe; if ye dogge hath been seen to course or bite any sheepe before, not being sett on, and his owner had notice thereof, then he shall both hange his dogge and pay for the sheepe.

What a great boon to the country, could such a law be enforced to-day throughout every State of the Union!

An additional order was made in October, 1648, for pasturing the sheep upon the commons, which reads:

Whereas the keeping of sheep tends much to the benefit of the country, and may in short time make good supply towards the clothing of the inhabitants, and forasmuch as all places are not fit for that end, it is ordered that it shall be lawful for any man to keep sheep on any common, be it for cows, oxen or otherwise, and the selectmen were to clear the commons for sheep pasture.

Another order was made offering bounties for the killing of wolves, which were very destructive of the sheep. For every wolf killed during the ensuing four years an Englishman was entitled to at least 30 shillings, and an Indian 20 shillings.

In 1652 the increase of sheep in the vicinity of Boston had been so great that Charlestown numbered 400 alone, and Lynn had considerable flocks, which were kept at Nahant, under a common shepherd. In 1654 the general court, taking into consideration "the right ordering or woole," ordered that all manner of persons who were owners of sheep and who offered wool for sale should be enjoined yearly to wash their sheep in clear water, not being either salt, brackish, or. dirty, and also that care be taken that they be not kept in dirty or sandy ground between the time of washing and shearing; and it was further ordered that in making up the fleeces due care be taken that no short locks and lumps of dirt be wound up therein, upon the penalty of 12 pence per sheep.

In August, 1654, sheep appeared to be unequal to the demand made upon them for wool, as the country was in great strait for clothing; and as the most likely way tending to a supply in that respect was in increasing the number of sheep, it was ordered by the general court that no ewes or ewe lambs should be transported out of the country to any foreign port or place under penalty of 5 pounds for every one so exported; but under certain restrictions they could be sold to other colonies in confederation with Massachusetts; and it was further ordered that no rams or wethers could be killed until they were 2 years old, and this order was to be "published by a drum in the market place of Boston."

Having thus provided for the increase of sheep the general court turned its attention to the manufacture of the wool thereof, and in 1656, "taking into serious consideration the present straits and necessities of the country in respect of clothing, which is not like to be so plentifully supplyed from foreign parts as in time past, and not knowing any better way or means conducible to our subsistence than the improving as many hands as may be in spinning wool, cotton, flax," etc., ordered all hands—

Not necessarily imployed on other occasions, as women, girles, and boyes, shall and hereby are enjoyned to spin according to their skill and ability, and that the select-

men in every towne doe consider the condition and capacity of every family, and accordingly to assess them, as one or more spinners. And because severall families are necessarily employed the greatest part of their time in other business, yet if opportunities were attended some time might be spared, at least by some of them, for this work, the said selectmen shall therefore assess such families at half or quarter of a spinner, according to their capacities. And that every one thus assessed for a whole spinner doe, after this present year, 1656, spin for 30 weeks every yeare, 3 pounds per week of linsey, cotton, or wooling, and so proportionately for half or quarter spinners, under the penalty of 12d. for every pound short; and that the selectmen shall take special care for the execution of this order. And the selectmen in all the townes within this jurisdiction shall have power to make such orders in their respective townes for the clearing of commons for keeping of sheep, as also for the time of putting rams to their flocks, as they shall judge meet; and it is hereby ordered that the deputies of the several townes impart the mind of this court to their inhabitants concerning the sowing of seeds, both of hemp and flax.

In this same year of 1656 the first weaver to settle and commence weaving at Lowell was encouraged to do so by a grant of 30 acres of land. The orders made by the general court and increased attention to the sheep caused a gratifying multiplication in the flocks, and in 1658 John Josslyn, in his voyages, says that in the town of Blackpoint alone there were 700 or 800 sheep; and John Winthrop, writing in 1660, says: "This country also is now well stocked with horses, cowes, sheepe, and goates." By 1662 the increase had been so great and the consequent supply of wool so full that sheep declined in value to one-fourth of what they formerly were held at, and the general court reduced the tax upon them, as shown in this order:

Whereas, in the lawe, sheepe are to be assessed at twenty-five shillings a head, and that they are now fallen to about a fourth part of the price they were ordinarily sold for, whereby many are discouraged for keeping such useful creatures, it is therefore ordered by this court and the authority thereof that henceforth the rate for sheepe shall be at ten shillings a head.

The increase of sheep in Massachusetts and other New England colonies did not escape the jealous eyes of the English traders, and the council for foreign plantations made complaint that the trade of New England was in—

no way managed to the advantage of His Majesty's Crown. They pretend an exemption to the payment of customs, and importing very little to the balance of their exportation; that contrary to the policies and restrictions heretofore observed they have increased a stock of sheep to nearly one hundred thousand, whereby this nation and the manufactures thereof are become less necessary to them; but they are likely to be so stored with wool that the Dutch, who trade freely with them, may supply themselves from thence.

Those who had a few sheep kept them on their home lots and about the villages until the number was so much increased that the owners could coöperate and pay a shepherd. All this was looked to by the towns, and certain tracts were laid out and devoted to the pasturage of the cattle in common herds, and rules laid down from time to time regu-

lating their use. For instance, on April 16, 1638, the selectmen of Boston, in view of a scarcity of pasturage, ordered—

For soe much as our common pasturing is but scant upon the necke and cow-keepings for the inhabitants is of necessity, that, therefore, all the sheepe on the necke and dry cattell, such as are not for draught, shall be had away from off the necke by the laste day of this month, in penalties for every head after that time 11s. a weeke for every weeke after, and the sheepe not.

In May, 1646, it was ordered that there should be kept on the commons, by the inhabitants of the town, but 70 milk cows, and that no dry cattle, young cattle, or horse should be free to go on the commons, "but one horse for Elder Oliver," and it was further ordered that if any desired to keep sheep, they "may keep foure sheepe in lieu of a cowe."

The herding of cows under care of a keeper was a common custom in all New England. During the day the keeper watched them, drove them into the settlement at night or late in the afternoon, where they were milked by their owners night and morning, and then turned over to the care of the cowherd or keeper, who drove them out to the commons. The cowherd also had the keeping of the town bull, for whose services he was to receive 2 shillings and sixpence per head for every cow, he to pay for the wintering of the bull. Boston was prosperous enough in 1654 to own two town bulls, and Thomas Alkok, the keeper, was allowed to receive sixpence a head, with "power to gather upon every cowe." At first the same person who kept the cows watched the sheep, but as they multiplied there was a division of labor, the cows having a "cow-heard" and the sheep a "sheep-yeard." The former ranked the highest. The latter, in 1659, was allowed "6*d.* for every sheep and 2 pence for every lamb." Sheep were not allowed to be kept upon the neck without a keeper, and no ram was permitted there after the 10th of June until the 1st of November. Some years later than this, "for the preventing of rams going with the ewes out of due season, within the district of Rumney Marsh," it was ordered—

That whosoever of the inhabitants within the district aforesaid shall finde or take up any ram going with his or their sheep, at any time from the 10th of August to the 10th November yearly, such ram shall be forfeited to such person so finding and taking up the same.

The connection of "Rumney Marsh," an exposed neck of land, with sheep and sheep pasturage leads us back to Romney Marsh, Kent County, England, a similar tract of land lying near the sea and sustaining more sheep than any other tract of land of like size in England. Men of Kent came about this time and before to this part of Massachusetts, and it is reasonable to infer that they gave this neck of land its name and stocked it with their Romney Marsh or Kentish sheep, some of the best of Old England.

The outlying towns were governed by the same general orders of the court, and followed, substantially, the customs of Boston; they had cowherds and shepherds, and followed the practice of common herding and keeping town bulls. In Andover the herdsmen and shepherds

were assisted in watching the flocks by boys and girls, who were obliged also to have some other employment meanwhile, so that their time might not be wasted or habits of idleness formed, as witness this order of the general court:

1642. The court doe hereupon order and decree that in every towne the chosen men are to take care of such as are sett to keep cattle that they are to sett to some other employment withall, as spinning upon the rock, knitting and weaving tape, etc.; that boyes and girls be not suffered to converse together.

Imagine, if one can, the rocky pastures of New England with flocks and herds grazing on the hillsides, while the boys and girls, seated on the rocks, ran the spinning-wheel and did household knitting without speaking to each other.

Perhaps the most suggestive and interesting process in all this common herding was in the folding of sheep by means of gates. Lancaster says that a night pasture fenced to keep out wolves is mentioned about 1652 as "that fence set up by the co-partners." Rowley, in 1643, defines the right to sheep-gates, *i. e.*, lengths of fence to be set up in those night folds, in a minute and very curious way. "To the end that every man may have an equal share in the commons according to purchase, it is agreed that every 1½ acres house lot shall have 1½ gates (in the common pasturage); that every 2 acres have 4½ gates; 3 acres have 13½; 4 acres, 22; 6 acres, 45." These sheep-gates, thus carrying the home protection of the farm out into the public common for the benefit of the weakest animal administering to man's wants, fitly symbolize the spirit of the New England Commonwealth.*

The system of folding sheep by means of gates was carried out very elaborately by Newbury. First, the selectmen divided part of the commons into five distinct ranges or sheep-walks, which were to be occupied by five flocks of sheep, each of which was to be kept within its own prescribed limits under penalty of 12*d.* a head for every sheep so disorderly (so says the town records) as to be out of place night or day. Each flock was under the care of a shepherd, hired by the owners of the sheep. The following agreement, signed by eight owners of sheep feeding on one of the five ranges, shows how each company managed its concerns:

April 16, 1683.—At a legall meeting of the company, whose names are here set down, we have agreed that every man shall take his full turn of folding for this year in order according as their names are set down; and for the next year it shall begin with that man that had no benefit, or that had not his whole benefit of folding upon his corn, and so successively from year to year till every man hath had that benefit of folding upon his corn or otherways in season. And also it is agreed that every man shall bring a sufficient gate for every score of sheep he doth bring or send to the flock belonging to this company, according to the number of sheep given in for folding. It is also agreed that Mr. Nois (Noyes) and Mr. Garrish shall tack account of every man's sheep and proportion to every man his share of folding, and to conclude the end of foulding the fifth of November and let the first share of foulding to the biggest, if they make any difference in every man's two shares. It is agreed that Evan Morris shall keep sheep for this year, 1683, and he is to have six shillings a week in pay, and he that have above forty in the fold shall give him one shilling out of the whole in money, and all that are under thirty shall pay sixpence in money a man. They whose sheep are kept shall allow him his dyett besides the said six shillings per week where the sheep are folded.

* Economic and Social History of New England. William B. Weeden.

This company, represented by eight members, comprised sixteen individuals owning 704 sheep, Capt. Pierce owning 105, the largest, and John Smith but 12, with Cousin Pettingill a good second with but 14. Richard Brown and Widow Stickney owned 24 each. The average number of each person's ownership was 64, which is in considerable excess of the average ownership in the colony at that time, which did not exceed 20 or 25.

A few words in explanation of these rules for folding. The necessity of folding the sheep securely every night came from the great destruction caused by the wolves; and this necessity our forefathers turned to the advantage of their corn land by folding the sheep upon it.

Having set the day upon which Shepherd Morris was to commence his services, which this year was the 23 of April, and designated the man who was to have the first benefit of folding, who this year was Richard Brown, each one of the company brought to his corn land his share of the materials, a gate for every score of sheep, with which they set up the pen. After remaining there the prescribed time, it was taken down and set up on Cousin Pettingill's land, and thus it passed round from one to another, like a mug of flip at an "ordinary" in olden time, each one receiving upon his corn or corn land the "full benefit" of the top dressing, which 700 sheep could give. Wherever the pen was erected there the shepherd was to have his "dyett," and thus, like a menagerie, or traveling circus, he and his animals were continually in motion. At other times and in other places, the pen was erected on some part of the common land, and was, after a suitable time, removed, and a crop of turnips raised, which, in the fall, were divided pro rata among the owners of the sheep. Turnips at the time, and for half a century afterward, supplied the place of potatoes.*

Some of the towns did not have sheep enough to herd until near the close of the seventeenth century; such was the case with Hadley and the upper towns on the Connecticut, where, after shepherds were employed, the sheep were folded at night and the manure was paid for by those on whose land the folds or pens were put up. In Hatfield the sheep were folded in hurdles, or movable pens, which were carried from one place to another. Here the wages of a shepherd were ordinarily 12 shillings per week. This town had 273 sheep in 1691, and 291 in 1699. The flock in Hadley increased slowly. In Hatfield, the cowkeeper and shepherd enjoyed the privileges of most of the Sabbaths. In 1672 every man that had 3 cattle on the commons was to take his turn in keeping the herd on Sundays. In 1693 the shepherd was to take the sheep every tenth Sunday, and the owners were to guard them nine Sundays in ten.† Haverhill had similar arrangements; a shepherd for the town flocks in 1652 was allowed 12 shillings and 6 pence per week, to be paid in Indian corn and butter. He was "to keep ye heard faithfully as a heard ought to be kept; if any be left on the Sabbath when ye towne worship, they who keepe are to go ye next day, doing their best endeavore to find them." He was not permitted to turn his flock into the pasture on the Sabbath until the "second beating of the

* "History of Newbury." Joshua Coffin.
† "Judd's History of Hadley."

drum." The regulation referred to cattle alone, probably, for it is not known that Haverhill had any sheep until 1684, when "the proprietors of the Great Plain, thinking to lay down the said field for some years to be improved for a sheep pasture" the town gave them leave to fence it, choose officers, and make all necessary regulations for that purpose. Three years later, in 1687, the town took this action:

> It being the interest and desire of the inhabitants, for the sake of back, belly, and purse, to get into a stock, and a way to keep a stock of sheep, in which all endeavors hitherto have been invalid and of no effect, for a further trial the selectmen have hereby power granted them to call forth the inhabitants capable of labor with suitable tools and in suitable companies, about Michaelmas, to clear some land at the town's end, sides, or skirts, as they in their discretion shall think meet to direct, to make it capable and fit for sheep to feed upon with the less hazard; and he that is warned as above, and doth not accordingly come and attend the service, shall pay a fine of 2*s.* per day.

The great hazard of sheep raising here, as in other towns, was occasioned by the ravages of wolves among the flocks. In addition to the bounty paid by the colony for their destruction, Haverhill for a long period paid 40 shillings for every wolf killed in the town. Newbury, in 1644, ordered that for every wolf killed with hounds 10 shillings should be paid, and if with a trap, or otherwise, 5 shillings; provided the heads were brought to the meeting house and nailed up and the constable duly notified; and in the Hampton records of the same year is found this similar declaration: "It is hereby declared that every townsman which shall kill a wolf and bring the head thereof and nayle the same to a little red oak tree at the north east end of the meeting house, shall have 10 shillings a wolfe for their paynes." Amesbury, in 1642, offered a bounty for every wolf killed, which was increased to 20 shillings in 1687, and repealed in 1696; but forty-two years later, in 1738, a bounty of 5 pounds was voted for "every wolf that shall be killed," in order to save the sheep from these ravenous beasts. To clear the forests of these pests was no small part of the labor of the primitive settler, and he hunted them with gun and traps. A mode of catching them with hooks is described:

> Four mackerel hooks are bound with brown thread and wool wrapped around them, and they are dipped into melted tallow till they are as big and round as an egg. This thing, thus prepared, is laid by some dead carcase, which toles the wolves. It is swallowed by them, and is the means of their being taken.

By the end of the seventeenth century sheep had so far multiplied that all wool needed for domestic purposes or homespun manufacture was abundant, and some towns had a surplus for trade and export. Particularly was this the case with Nantucket, where sheep were introduced in 1660, at its first settlement by the proprietors, and where a prosperous business was carried on in exporting wool until 1675, when it was prohibited; most families had looms of their own; spinning-wheels were common and fulling-mills were being put up at every favorable point on the small streams. Yet, says Weeden, the weaving was not

confined to the households, but weavers were established in various towns; much of the manufactured linsey-woolsey was made with linen warp and wool weft, or filling. Homespun of wool for men's wear was made at home and finished in the fulling-mills established in the towns from an early date, as at Watertown in 1662, Andover in 1673, Ipswich in 1675, Salem in 1675, and Newbury in 1687. A few years after the latest date here recorded it was asserted that the country people and planters had entered so far into making their own woolens that not one in forty but wears his own carding, spinning, etc. Fulling-mills for finishing in a rough way the hand-woven woolens were starting constantly in the different districts. The most complete manufacturing establishment was that of John Cornish, of Boston, who had a fulling-mill, two furnaces for dyeing wool, four looms, and all the necessary accessories for combing and weaving. The inventory of his estate, taken March 2, 1695–'96, showed considerable quantities of wool and woolen stuffs of most every description and color, so varied, in fact, that they give evidence that Cornish traded his manufactures for that of others; the farmers or farmers' wives taking in raw wool or spun worsted and exchanging it for yarn and cloth. Cornish was a worsted comber and weaver, the pioneer of this industry in New England.

The manufacture increased, and while in 1689 not a twentieth part of what the country needed or consumed as to woolen or linen clothing was made in New England, thirty years saw that great strides had been made, and not only had the colonists "fallen upon the woolen manufacture," but they had fallen upon the making of beaver hats. When this startling fact reached the London company of hatters, that hats were made in the land of furs, they remonstrated, and their craft was protected by an act forbidding hats to be transported from one plantation to another. In 1719 Samuel Shute, the royal governor of Massachusetts, informed the English Government that in some parts of the province "the inhabitants worked up their wool and flax, and made a coarse cloth for their own use," and that there were hatters in the maritime towns, upon which Parliament resolved "that erecting manufactories in the colonies tended to lessen their dependence."

There was a steady increase in this homespun manufacture, and the quality of the article became much improved and was worn not only by the farmers and those in the middle walks of life but also by the well-to-do and opulent of the colony. Superior wool and cotton goods were made and sold by John Palmer in Boston in 1746; and in 1749, at the fourth anniversary of the "Boston Society for Promoting Industry and Frugality," 300 "young female spinsters" spun at their wheels on Boston Common, and weavers were at their looms. Self-dependence was asserting itself, and not only was American wool used for American clothes, but sheepskins were used. John Calef, of Charlestown, in 1747 made sheepskin breeches, "cloth colored for breeches very much upon the red." In 1777, after the war of the Revolution had com-

menced, Massachusetts prohibited the exportation of rum, molasses, cotton or woolen goods, wool, leather, and many necessary articles to be retained in the country, and New Hampshire laid the same restrictions. The latter colony also paid much attention to sheep and to the woolen manufacture, the kind of clothing being indicated by that worn by her troops in the army in the year 1782. "White woolen cloth, well milled and sheared, three-fourths wide, 7*s.* per yard; eight-quarter blankets for soldiers, 21*s.* per yard; good felt hats, 5*s.*"

RHODE ISLAND.

We have no definite record of the first sheep taken into Narragansett Bay and Providence Plantations, but we know that goats went with the first settlers and sheep are mentioned soon after. That they were quite plentiful and of good breed we judge from the fact that they bred rapidly and were sought after by the Connecticut settlers as early as 1648, in which year William Coddington sold some to John Winthrop, jr., and on their delivery accompanied them with a letter which possesses some interest:

October 14, 1648.—I have, according to your desire, sent you but ten ewes; they are all, I do assure you, of the best English breed. I could have sent you longe leged and biger sheepe, but these are better bred. I have sent you five blacke and five whit. I judged it best soe to doe, you not expresseigne your desire to me. They are all but shearlings, that is, one yeare old at last lambinge and nowe yeening by two, which is known by their teeth, none of them havinge above two brod teeth. I have sent you a rambe lambe, which is of my English breed likewise, both by the ewe and rambe. I know the island nore the countrie could not have furnished you with such a parsell of sheepe out of my hand. * * * I am glad I was on the island to deliver you your sheepe myselfe. If you desire to have more whit sheepe than blacke then rambe your ewes with whit rambs; if more blacke then you may save a black rambe out of your herd of blacke ewes, but by all means put not to your rambes till the latter end of the next mounth, November.

John Pynchon and others bought sheep in Narragansett Bay in 1655, for the settlements in Connecticut and for the towns in Massachusetts on the upper waters of the Connecticut River, and in 1665 it was reported that the best English grass and the most sheep were in this province, the ground being very fruitful and the ewes bringing ordinarily two lambs. In 1678 wool was rated at 6*d.* per pound, which was considered as an overvaluation, for the treasurer was allowed to pass it at 5*d.* In 1695 wool was taken for taxes at 7½*d.* per pound, and sheep one year old were taxed at 5*d.* per score. They sold at from 4 to 6 shillings each. In 1711 wool was 11*d.* per pound. Weeden observes that for three-quarters of a century before 1760 the diligent housewives sent to Newport for wool. They made woolen cloths for garments and bed coverings, and they knit stockings. They worked willingly with their hands, and every house in the country was a factory.

Of all the colonies Rhode Island took the lead in exporting sheep; 60 ewes were sent to South Carolina in 1726, and she carried on the trade extensively with Curaçao and the other West India ports. She ex-

ported not only sheep but other live stock, especially horses, in the breeding of which she excelled. In July, 1733, Capt. Crow sailed from Rhode Island for St. Christophers, having on deck 14 horses and 100 sheep. The vessel was wrecked, and horses and sheep were lost. The frequent accounts of such disasters indicate the extent of the trade.

Rhode Island exported much wool also, considerable quantities being sent to the settlements on the Delaware in West Jersey in 1685, where quite a flourishing woolen manufacture had sprung up. It brought 6*d.* a pound.

Wool-growing and the raising of flax, and the manufacture of these staples into cloth, were encouraged by an act of assembly in 1751, and later other acts were passed, notably encouraging the making of wool cards, the mainspring of homespun industry.

CONNECTICUT.

Sheep were taken into Connecticut by the first settlers, and in 1640 orders were made for their improvement. Their multiplication was very slow, and they were of a very poor kind. Governor John Winthrop, jr., sought their improvement by a purchase from William Coddington, of Rhode Island, in 1648, of which mention is made on a preceding page. Sheep continued scarce, and in 1660, to encourage the raising of them, they were freed from the taxes paid by other cattle, and grounds were the same year ordered to be cleared for their pasturage. Ten years afterward, in 1670, "for the encouragement of rayseing sheepe," the general court of the colony ordered that every male person in the several plantations 14 years old and upwards, that were not public officers, should work one day in June of each year in cutting down and clearing the underwood "that so there may be pasture," and the townsmen in the respective towns were to "appoint the places where they shall worke, in the highways or commons or other places agreed upon." Heavy fines were threatened upon all who neglected this duty.

The same customs for the care of sheep prevailed in Connecticut as in Massachusetts. When they were but few they ran on the house lot or in the streets, and in warm days collected under the meeting-house, but as they increased in numbers the town took cognizance of them and regulated their keeping. In 1693 the general court ordered that all sheep, cattle, and swine above a year old should be marked and the marks be registered in the town book. In most of the towns "viewers" were appointed, whose office it was to inspect the fields and see that they were closed so as to "turn creturs" when they were let out in the spring; and a kind of sheep council was authorized, acting independently of the town, yet a part of it.

The cloth manufacture made but slow progress in Connecticut, and not until the close of the century do we find any evidence of fulling-mills. The town book of Waterbury contains an order passed January 20, 1692–'93, stating that "there was sequestered the great brook from

Edman Scot's lot down to Samuel Hickox's, jr., lot for to build a fulling-mill." There is no evidence, however, that such a mill was built there before the year 1728 or 1730. A fulling-mill was built on Nahantic River in 1693 by Peter Heckley, of New London, which was the first in that town. The same town in 1730 granted to Lieut.-Col. John Livingston, of that place, what right it had to Sawmill Brook to erect a sawmill and fulling-mill thereon; and in 1721 Thomas Smith obtained leave to erect fulling and grist-mills at Upper Alewive Cove. Trumbull states that in 1713 there was but one clothier in Connecticut, and the most he could do was to full the cloth that was made. This statement has been disputed as erroneous, the belief being that there were many clothiers and fulling-mills at that date. Much of the cloth was worn unsheared and unpressed. In 1736 John Davis, a clothier of the colony, proposed to "instruct the people in the process of woolen manufacture," but no particular effort was made in that direction.

By an act of the general court in 1716 no one person was permitted to turn more than 50 sheep on the highways with a keeper to "eat up and consume the herbage thereon;" but an act of May, 1730, provided that the owners of sheep could meet within certain limits, as there should be occasion, and in such meetings order that the sheep in such town should be put together in a flock or flocks annually, and by a vote, according to the number of sheep held by them, choose a clerk to make entries of the sheep; also to choose sheep masters for the hiring of a shepherd, and letting the flock to fold, to restrain rams from going at large, and to secure flocks from dogs; and, six years later, authority was given these sheep selectmen to kill dogs. In 1750 it was provided that every town that did not agree to keep a flock should have the same power to make acts relative to sheep as the owners of sheep had that lived within the limits of any flock.

Sheep at this time were comparatively plenty, and many were exported from New London. A fair sample of a well-to-do farmer's estate shows, in 1748, "four negro servants, about 50 head of horned cattle, 32 horses, mares, and colts, and 812 sheep." Notwithstanding Coddington's sale to Winthrop of some of the best English blood, not much can be said of the sheep of Connecticut at the middle of the last century. One of the earliest writers on American agriculture was Dr. Jared Eliot, a preacher and botanist. He was grandson of John Eliot, the apostle of the Indians, and was born in Connecticut in 1685. He was living at Killingworth, in that State, in 1747, and in the following year began the publication of some essays upon field husbandry in New England which appeared in the journals of that day and attracted much attention. These essays, running from 1748 to 1759, were collected and published in a volume in 1760. Almost the first words of the reverend farmer-author are:

> A better breed of sheep is what we want. The English breed of Cotswool sheep can not be obtained, or at least without great difficulty; for wool and live sheep are contraband goods, which all strangers are prohibited from carrying out on pain of

having their right hand cut off. I have one ram which is of good breed in part, has had no better keeping than our ordinary sheep (I was of the mind to see what he would do with mean keeping); notwithstanding his poor keeping two years he is very large and long, has fine wool, and last shearing time afforded a fleece of 6 pounds. As the mixture of this breed with our ordinary sheep successively will run the breed quite out, so putting the same breed together, as they approach nearer the original, the true breed may be recovered.

In another essay he discusses the means of fertilizing lands, and adds this testimony to the value of sheep and goats:

Lambs are for clothing, and goats are for the price of the field. They are excellent to subdue rough, uncultivated land. They are in their nature abundantly fitted to serve that useful purpose; they destroy bushes, briars, and weeds. By their tread, their dung and urine, which is very hot, they sweeten the ground to that degree, as in a little time the land will be clothed with grass; yet that a piece of land subdued by them will thereby be doubled in its value or price, is what, perhaps, hath not been so much thought of as would be proper.

Household manufactures in Connecticut grew with the increase of sheep, and much advance was made in the linen and woolen trades. "There are many alive at this day" [1748], says Eliot, "who remember since the linen was coarse and what we call tow cloth; the other cloth for outer garments, linsey-woolsey; and for some time was worn without fulling or any kind of dressing; after they began to full cloth, for a time they used neither tentering nor pressing; they only stretched and wound the cloth hard upon a smooth log of wood."

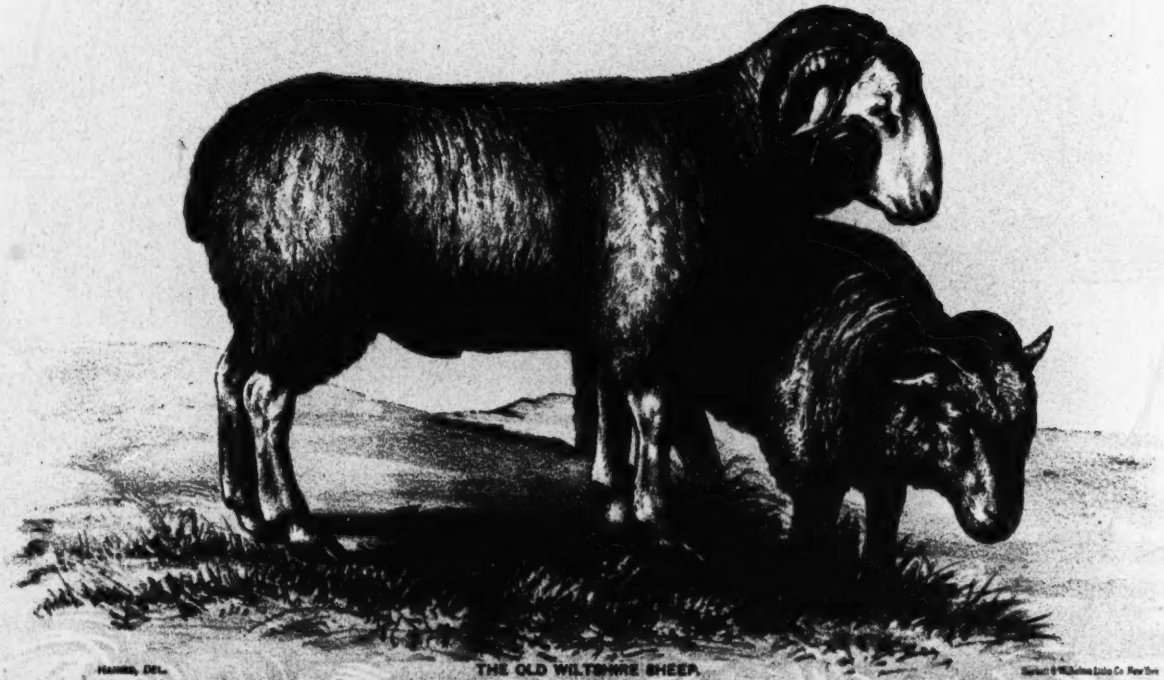
A striking and touching instance of the most primitive homespun or household manufacture of Connecticut is thus given by Weeden:

A dozen sheep and one cow comprised the stock, and to her yield of milk the latter added service at the plow. Corn bread, milk, and bean porridge were the staples of the diet. The father being incapacitated by illness, the mother did the work in the house and helped the boys in the fields. Once, in midwinter, one of the boys needed a new suit, and there was neither money nor wool in the house. The mother sheared the half-grown fleece from a sheep and in a week it was made into clothing. The shorn sheep, so generous in such need, was protected by a wrapping made of braided straw. They lived 4 miles from the meeting house, to which the mother and her two boys walked every Sunday. The boys became Samuel and Eliphalet Nott, one a famous preacher, one the president of Union College.

At various times, from 1736 until the close of the century, Connecticut passed acts for the encouragement of sheep husbandry and the woolen manufactures by granting bounties for cloth made and exempting sheep from taxation and seizure for debt, and under these favoring acts and the public spirit of her citizens the woolen manufacture was well established and maintained by the flocks that whitened her green hillsides and fertile valleys.

The "American Husbandry," published in 1776, describes the wool as "long and coarse, and manufactured into a rough kind of cloth, which is the only wear of the province, except the gentry, who wear the finer cloths of Great Britain."

From some imperfect data concerning the first sheep brought to New England during the early settlements, it is presumable that they



Hamer, Del.

THE OLD WILTSHIRE SHEEP.

FROM "DOMESTIC ANIMALS OF GREAT BRITAIN." —LOW.

AFTER LOWATT.

KENTISH OR ROMNEY MARSH SHEEP.

were of the kind common to England at the time, and were the Wiltshire, the Romney Marsh, the Herefordshire, the Norfolk, and the old Southdown or Sussex sheep; at least, all the characteristics of these breeds could be seen in the different flocks in the eastern and middle States at the beginning of the present century, and such also were the sheep of New York prior to 1804. These sheep, as they appeared when first introduced into the country, are now extinct, but a brief description is necessary to show the foundation upon which was reared our sheep husbandry and upon which was also crossed the first Spanish Merinos.

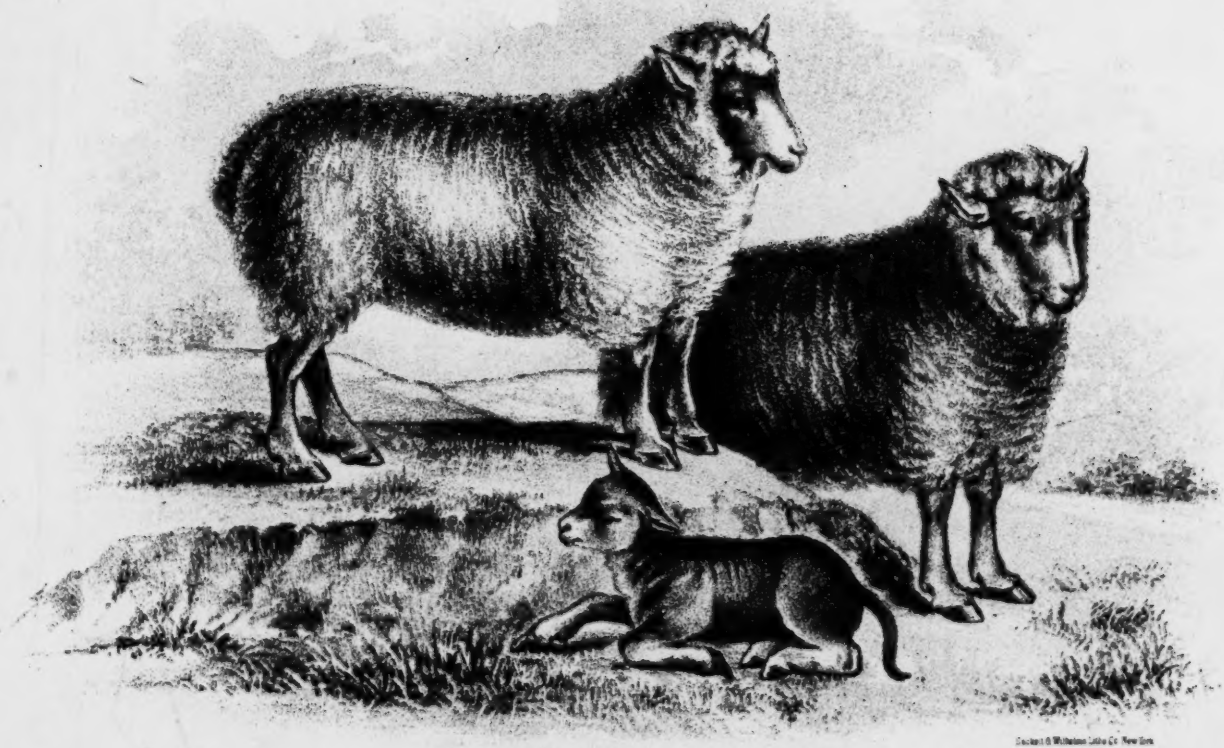
The old Wiltshire sheep were the largest of the fine-wooled sheep of England, and gave a fleece seldom exceeding two pounds in weight, and which was much prized. They had large horned heads, awkward, ungainly bodies, and were rather greedy feeders, slow in fattening, but occasionally attaining very great weight, some of them running from 195 to 250 pounds when fit for the butcher. They were excellent folding sheep, and enabled more corn to be grown in Wiltshire, in proportion to its size, than in any other county in England, and it was this virtue that gave them such value to the New England settlers, for folding on corn land was one of the first uses to which sheep were put, and the system pursued in their old Wiltshire homes by the first settlers was transferred to their new homes. If possible, the sheep were turned on better grass a little while before they were folded, and had leisure to chew the cud and to digest their food during the hours of rest; and in the morning, their stomachs being emptied, they were not only able, but eager, to climb hills and traverse stony, hard pastures for their daily sustenance. The ancient Wiltshires have now passed away, but their blood, flowing through the veins of the later Wiltshire Downs, is now with us in the improved Hampshire Downs.

The Romney Marsh sheep were so called from a limited tract of low reclaimed land on the southern coast of Kent, at the western entrance to the Straits of Dover. The tract is 14 miles in length, and at its broadest part 10 miles, and diked from the overflowing of the sea, and consists in part of fertile sand, gravel, or peat, but essentially of a deep, rich, alluvial clay, bearing the grasses and other herbage plants abundantly, and never having been subjected to the action of the plow. The grass was exceedingly rank. There were no hedges or trees to afford shelter. The inhabitants were few in number, and mostly employed in tending the numerous sheep by which the marsh was depastured, and which were reared in greater numbers than in any similar space in Great Britain. Sheep were kept here from time immemorial, and until within the present century were not much changed. They had long, thick heads, and broad foreheads crowned with a tuft of wool. They were flat-sided, wide on the loin, with narrow breasts, a long, thick tail, with large feet on a thick leg. Their bones were large and the neck and body long. Their wool was long and coarse, coarsest on the breast.

They were favorites with the butcher, and carried much internal fat. They were very hardy, required no artificial food during the winter, except a little hay, and were particularly adapted to the exposed position on Boston Bay, where they are supposed first to have been known in Massachusetts.

The old sheep of Herefordshire were of two varieties, the Ryeland being the distinguishing one, so called from a district in the southern part of the county on which was formerly grown a great quantity of rye, and where these sheep were bred. It was a small breed, seldom exceeding more than 14 or 16 pounds the quarter in the wether, or from 10 to 13 pounds in the ewe. They had white faces, and were polled, the wool growing close to, and sometimes covering the eyes. The legs were small and clean; the bone altogether light; the carcass round and compact, and peculiarly developing itself on the loins and haunches. The Ryeland was noted for the softness and fineness of its wool; in fact, it was long regarded as the finest produced in Great Britain, and was compared to that of Apulia and Tarentum. The weight of the fleece rarely exceeded 2 pounds. The Ryelands have practically disappeared from English sheep husbandry. Their former value, arising from the value of their wool in the manufacture of native cloth, could not be maintained against the finer wool of Spain and Saxony, and as mutton sheep they have given way to the Leicesters and Southdowns. The value of these sheep to the early settlers, principally for their fine wool, was fully appreciated, and traces of their blood were visible in some parts of Massachusetts and New York as late as 1809 or 1810.

The aboriginal sheep of Norfolk and Suffolk, such as the first American settlers knew them, were long and slender, the legs long, the face and legs black or mottled—an unmingled and intense black being considered as a proof of purity of blood; the face was long and thin, flat on the forehead and pointed at the muzzle; the countenance lively, and expressive of mingled timidity and wildness. The horns of the ewes and wethers were of a middle size, and generally straight; while the horns of the ram were long and beautifully spiral, like those of the old Wiltshire ram. They had wide loins, deficient forequarters, low shoulders, and a sharp and unsightly chine, with a small quantity of short and fine wool, seldom exceeding 2½ pounds. The wool had sufficient felting properties to fit it for being made into coarse cloths necessary for the raiment of the early settlers. They fattened readily, and, like the old Wiltshires, were exceedingly valuable as folding sheep. They did well on all sorts of pastures, and were very wild and restless in their habits, resembling in that respect as well as in their general appearance the deer. A good mutton sheep, producing wool suitable for coarse cloth, picking up a living on rough land, and above all valuable as a folding sheep, they were deservedly popular and were widely known in New England, more particularly, however, in Rhode Island and eastern Massachusetts. The breed is now extinct; in England it



HAINES, DEL.

THE RYLAND SHEEP.

FROM "LOW'S DOMESTIC ANIMALS OF GREAT BRITAIN."

AFTER YOUATT.

OLD NORFOLK RAM.

has been superseded by the improved Suffolk Downs and Southdowns; in the United States it has been crossed out of existence, yet its black face and legs were quite familiar in the common sheep of the country at the beginning of the present century, and are distinguishing marks of the modern improved Suffolks. The plate showing a ram of the old Norfolk breed represents him as he appeared at the beginning of the century in England, when some improvement had been made, not by crossing, but by care and selection.

The old Southdown or Sussex sheep were polled, but it is thought probable that the original breed were horned. The dusky, or sometimes black, hue of the heads and legs not only proves the original color of the sheep and perhaps of all sheep, but the late period at which it was attempted to get rid of this dingy hue. Youatt says that in almost every flock, notwithstanding the great care which is now taken to prevent it, several parti-colored lambs will be dropped; some with large black spots, some half black, and some entirely black. A writer in the "Annals of Agriculture" states that he had frequently twelve or fourteen perfectly black lambs, although he never kept a black ram or ewe. From this he draws the conclusion that their original color was black; that art alone produced the white wool, and that if the best of the Southdowns were left in a wild state they would in a few years become black again. The Southdowns can trace their ancestry beyond the time of William the Conqueror, and were known at and before that time as grazing over the southern parts of England, from the eastern shore to the extreme point of Cornwall, and particularly on a long range of low, chalky hills of Sussex known as the South Downs, whence their name. These sheep were of a small size and not well shaped, being long and thin in the neck, high on the shoulders, low behind, high on the loins, down on the rumps, the tail set on very low, perpendicular from the hip bones; sharp on the back; the ribs flat, not bowing; narrow in the forequarters, but good in the leg, although having big bone. The wool was fine, weighing about 2 pounds to the fleece, the finest being produced on chalky soil, and the mutton was excellent. The Southdowns were good folding sheep; not as good as the Wiltshires and the Norfolks, but being of a more tractable, contented disposition, they did not stray so far from home to become the prey of wolves and the constant care of the shepherd. They were more hardy than the Norfolks, better enduring scarcity of food and the inclemency of the New England weather, and produced more lambs and made more attentive mothers. It is believed that the best sheep of Rhode Island and eastern Connecticut were generally of Southdown blood, and that the black ewes sold by William Coddington to Governor Winthrop in 1648 were of this breed. Black sheep had peculiar value among the early settlers in some localities, inasmuch as the wool required no dyeing when made into cloth, and was considered more durable in that state. Many people preferred to wear their cloths of undyed or black wool.

From the mention made by the Rev. Mr. Eliot of the Cotswold sheep, and of his reference to a ram he had of the pure breed, it is possible that that blood was infused into some of the Connecticut flocks about 1750.

THE CAROLINAS.

Sheep were taken to these provinces at an early day, and were generally of a superior kind, both for food and wool. North Carolina possessed some of the better kind in its earlier history, which were very thrifty, having most commonly two lambs at a yeaning, improving much on open pastures. The mutton generally was exceedingly fat, and of good relish. The wool was described as very fine, with a good staple. The women made of it woolen cloth, most of the families being kept in apparel, so that they had no occasion to run into the merchants' debt, or lay their money on stores for clothing. At a later day large portion of its sheep came with settlers from Virginia and partook of the general character of the sheep of that colony, including a strain of the old Leicester. In South Carolina the first notice we have of the use of the wool is in 1682, when some parties proposed to mix it with the native silk, producing a new kind of stuff. Many of the sheep were brought from England, and some from Rhode Island, and scattering notes of them indicate that some care was taken in the choice of them. Lawson said in 1714 that the mutton in the vicinity of Charleston was good.

GEORGIA.

Of the sheep of this colony, settled in 1732, not much has been revealed to us in its history. The mutton was pronounced good, and it was yet scarce in 1740, commanding 4½*d.* to 5*d.* a pound. In later days the wool was pronounced superior to that of the English kind, and furnished homespun garments for the majority of the people. In the southern part of the colony, bordering on Florida and the Spanish possessions, the Spanish sheep obtained a foothold, which they have maintained to the present day; they have degenerated, it is true, but are still hardy sheep, and held in some repute.

EARLY EFFORTS AT IMPROVEMENT.

With the approach of the Revolution, more attention was paid to the raising of sheep. A feeling of independence showed itself in the increase of flocks, that the domestic manufacture might be carried on, and there was an increased demand for homespun garments from those who had usually worn the finer products of the British looms. The press of the country called particular attention to the importance of increasing the number of sheep and improving them by selecting the best and discarding the poorest, and he was no patriot who continued to wear an English coat, or rather a coat made from English material.

In particular did the colonial assemblies and the General Congress take decided action. The General Congress, which met September 5, 1774, requested the merchants in the several colonies to import no more goods, and all the people to use their utmost endeavors to improve the breed and increase the number of sheep by killing as few of them as possible, and not exporting them, but selling on moderate terms to their neighbors who might need them, and to promote the agriculture and manufactures of the country, especially that of wool. The Congress of Deputies, which met at Annapolis in December of the same year, resolved to encourage the breeding of sheep, and to promote the woolen manufacture; and in the same month the Provincial Congress of Massachusetts recommended the people to improve their breed of sheep, and the greatest possible increase of the same. The Assembly of Pennsylvania recommended the people to abstain from eating, and the butchers from the killing, of sheep, and the association of butchers signed an agreement to that effect in December. In the following year it was ascertained that, in consequence, the number of sheep killed was 20,000 less than in 1774, a fact speaking well for the people, and revealing the taste for mutton in Philadelphia, for a consumption that could stand a reduction of this amount must have been considerable. In January, 1775, the Provincial Con gress of South Carolina encouraged the raising of cotton and wool by offering generous bounties, and, on March 27, 1775, the Convention of Virginia agreed unanimously, and proceeded to urge that, after the 1st of May next, no persons should use in their families, unless in case of necessity, and in no case to sell to butchers, or kill for market, any sheep under 4 years old; and the Georgia Provincial Congress, in July of that year, resolved that they would use their utmost endeavors to improve the breed of sheep and increase their numbers, and to that end would kill them sparingly, would not export them to the West Indies, and would spare their surplus to their neighbors; and they would encourage frugality and industry and promote agriculture and manufactures, especially that of wool. In New Jersey, where the home manufacture was considerable, the legislature, recognizing the fact that increasing the quantity of wool, flax, and hemp might be of similar advantage to the inhabitants, enacted that a bounty be given to persons raising or selling the same in the State, and on goods manufactured from sheep's wool the bounty was to be 1 shilling per pound to all raised over and above the amount required for their own family use.

The war caused a deterioration in the character of the colonial sheep and retarded the increase. The constant drain upon the bone and sinew of the land took the farmers from their homes; flocks were neglected or completely lost; the soldiery destroyed many of them, and, save near the large cities, the quality of the mutton sensibly declined.

Immediately upon the close of the Revolutionary war many citizens of the United States sought to improve their sheep by importations

from abroad and by greater care of those already possessed. Much was done in the latter respect, but England was too jealous to permit any of her improved sheep to be used for the purpose of increasing the wool product of her rivals, and prohibited by stringent laws their exportation from the kingdom. At the dictation of the English manufacturers old acts were revived and condensed into a new act which passed the English Parliament and received the royal assent in 1788, whereby the exportation of sheep (except wethers for sea stock, upon special license) was prohibited, under the penalty of forfeiture of the sheep and the vessel carrying them, together with £3 sterling for every sheep, and also three months' solitary confinement, to be inflicted on every person concerned or assisting for the first offense, and heavier fines and imprisonment for repeated transgressions. Nor could sheep be carried across any tide river or inlet of the sea within the kingdom without bond being given that they should not be exported. Means, however, were found to evade this law, and numbers found their way to our Atlantic ports, but it is extremely difficult to trace them; nor is it a matter of much moment, for they left but small mark upon the native flocks, save in one or two recorded instances.

Tench Coxe, writing in 1794, regretted the inattention paid to the raising of wool, but thought it must become much more abundant as the country became populated. Mutton, he contended, was the best meat for cities, manufactories, seminaries of learning, and poor-houses, and should be given by rule, as in England. The settlement of new lands, remote from water carriage, must introduce much more new pasturage and grazing than had been before necessary, as sheep, horses, and horned cattle would carry themselves to market through roads impassable by wagons. The foreign restrictions upon our trade would also tend to increase the number of sheep. Horses and horned cattle formerly constituted a great part of the New England cargoes for the English West India Islands; then these animals were exported to those places in smaller numbers, as American vessels were excluded from the ports. The farms, capital, and men formerly employed in raising them would want a market for their usual quantity, and the nature of that country being unfit for grain, sheep of necessity would occupy a great proportion of their lands. Though sheep were bred in all parts of America, yet—

> The most populous scenes in the Middle States and the Eastern States have been long settled, and, particularly the latter, are the places where they thrive best. In the Eastern or New England States they form one of the greatest objects of the farmer's attention and one of his surest sources of profit. The demand for wool, which has of late increased exceedingly with the rapid growth of our manufactures, will add considerably to the former great profits of sheep; and the consumption of their meat by the manufacturers will render them still more profitable.*

A New England writer, three years later, treating of the sheep of the

*"A View of the United States of America." Tench Coxe. Philadelphia, 1794.

Eastern States, says: "They multiply fast; they are subject to but few diseases in this country; their flesh is excellent food, and their wool of the greatest importance to this nation, in which the woolen manufacturing ought to be encouraged, and may be carried on to great advantage," and he proceeds to quote from Mortimer: "The farmer should always buy his sheep from a worse land than his own, and they should be big-boned and have a long, greasy wool."* To improve the wool of the New England flocks Dr. Deane advised that no lambs be kept for breeders but such as bear the best wool; and fine-wooled rams should be procured from distant places or from foreign countries.

Youatt, in his exhaustive treatise on sheep, says that—

until the introduction of the Merinos into North America little that was satisfactory could be affirmed of the sheep of any part of that country. Many portions of the United States, and even of Canada, possessed advantages for the breeding of sheep that were not surpassed in Europe. The country was undulating or hilly—the inclosures more extensive than in the best breeding districts of England—almost every pasture furnished with running water, and sheltered more or less by trees against the summer's sun; yet the sheep were of the commonest kind. There was a prejudice against their meat; a prejudice against them altogether; and there was scarcely a district in which the wool was fit for any but the coarser kind of fabrics. It might have been thought to be the policy of the mother country to foster a prejudice of this kind, in order that her colonies might be as dependent as possible upon her; and particularly that her woolen manufactures might then find a ready sale. Accordingly the American sheep, although somewhat different in various districts, consisted chiefly of a coarse kind of Leicester, and those were originally of British breed.

These sheep were slow in arriving at maturity, compared with the improved English breeds, and yielded, when fully grown, from 10 to 14 pounds of a middling quality of mutton to the quarter, and a wool only suited to the coarsest fabrics, averaging, in the hands of good farmers, from 3 to 3½ pounds to the fleece. They were usually long-legged, light in the fore-quarter, and narrow in the breast and back, although some rare instances might be found of flocks with the short legs and some approximation to the general form of the improved breeds. The common sheep were excellent breeders, often rearing, almost entirely destitute of care and without shelter, 100 per cent of lambs, and in small flocks a still larger proportion. These, too, were usually dropped in March or the earlier part of April. Restless in their disposition, their impatience of restraint almost equaled that of the untamed Argali, from which they were descended; and in many sections of our country it was common to see from twenty to fifty of them roving, with little regard to inclosures, over the possessions of their owner and his neighbors, leaving a large portion of their wool adhering to bushes and thorns, and the remainder placed nearly beyond the possibility of carding by the tory-weed and burdock, so common on new lands. The old common stock of sheep, as a distinct family, have about disap-

* "New England Farmer, or Georgical Dictionary." Samuel Deane, vice-president of Bowdoin College, Worcester, Mass., 1797.

peared, having been universally crossed, to a greater or less extent, with the foreign breeds of later introduction.*

The Massachusetts Society for Promoting Agriculture, in a paper of 1796, called attention to the great importance of improving the breed of sheep, remarking that the attempts heretofore made to "mend the breed" were few and evidently not well conducted. The principal efforts had been to increase the size of animals, which had not always been attended with increased profit. From this paper we learn that the great Lincolnshire rams had been imported and were said to be ill flavored, not healthy, and ill adapted to the short, sweet food of the New England hills, as they originally fed on the Lincoln fens or low grounds. It was suggested that the Dorsetshire breed as a smaller one was more desirable; it was not then known in America. It was particularly urged upon the farmers to make improvements on the native stock by judicious selection.

The same society, in 1799, submitted several questions to the farmers of the State. Among them were, What kind of beasts were kept on the farms and in what numbers? The inquiry was confined to medium farms, and the answers were given in the proceedings of the society in January, 1800. For convenience they are grouped:

(1) One to 2 horses; 1 yoke of oxen; 5 or 6 cows; 10 sheep.
(2) One to 2 horses; 15 cattle; 10 sheep.
(3) One horse; 4 oxen; 6 or 7 cows; 15 or 20 sheep.
(4) Two horses; 2 yoke of oxen; 15 cows; 15 or 20 sheep.
(5) Two horses; 15 cows; 15 sheep.

This ratio held good, not only in Massachusetts, but throughout all New England. The average farmer had one or two horses, from one to two yoke of oxen, and from ten to twenty sheep. The sheep ran out and fed on grass when they could get it, and were kept through the winter on hay, corn, turnips, potatoes, carrots, and pods, straw of beans and peas, and cornstalks. It was not the choice of these that they fed upon, but the article that was most available for the farmer and least needed by the horses and cattle. The cost of the sheep was from $1.50 to $2 per year, and the cost of eight sheep equaled that of one cow. The ordinary weight of the sheep was 12 pounds to the quarter, worth 4*s*. The largest and best sheep ran 28 pounds per quarter and sold at 6*d*. per pound. The fleece weighed from 2 to 3 pounds.

The descendants of these New England sheep, known in our day as "native sheep," in distinction from the breeds of known importation, were of two kinds—one with white faces and the other with dark faces and legs. The first was preserved in the eastern part of the country and on the islands, while the latter are known in the valley of the Connecticut by the name of "English smuts" or "Irish smuts." These last may have been Southdowns, imported before the improvement of that celebrated breed, as they bear many of their characteristics, and might,

* "Sheep Husbandry in the South." Henry S. Randall.

had they been bred with the care and perseverence which the Southdowns received, have been a most valuable breed.*

But on the immediate seaboard, not only of Massachusetts, but of Connecticut, Rhode Island, Long Island, New Jersey, and far to the southward, the sheep were of a motley variety. Our seamen would often bring a ram or ewe or a pair from the countries that they visited, and thus in time the flocks near the coast became extremely various.

At the close of the century the sheep of Virginia were generally descendants of those brought into the colony before the Revolution, with the exception of a few Irish sheep which had been smuggled into the country. The Irish sheep were large and fine, but were not much extended. The generality of the sheep were good, yielding a fair quantity of wool and good mutton, better wool, according to George Washington, than that raised elsewhere in the country.

It may be stated that, as a general thing, very little attention was paid to sheep in any of the States about the year 1800. Every farmer had a certain number of them, sufficient to furnish him with wool for domestic uses. It was not his interest to have more, for as manufactures had not arisen and it would not bear exportation, wool was an article scarcely marketable in large quantities. The drovers, also, to make up a lot of fat wethers, had to travel from farm to farm, picking up a few here and a few there. No attention being paid to their improvement, the practice prevailed universally of selecting the very finest sheep for the table, and the butchers were allowed to do the same from the flocks. The farmers did then with sheep as many do now with potatoes—they selected the poorest and smallest for seed.

The man who, of all others, was the first to improve the breed of native sheep, of which we have record, was George Washington. Few ever possessed so keen a love for the farm and for rural pursuits and a greater pride in the profession of a farmer than he, and before the war he was known in London as the most reliable planter in Virginia. Immediately after the peace of 1783, and his return to the occupation of a farmer, he paid particular attention to his breed of sheep, of which he usually kept from 700 to 800, and from which he realized upon the average over 5 pounds of wool to each sheep. He was a correspondent of Arthur Young, of England, who at the close of the last century was the most intelligent and advanced farmer of England—a great traveler, very observant, and a voluminous writer on agricultural matters.

Writing to Arthur Young, from Mount Vernon, on December 4, 1788, Washington says:

> I would willingly have sent you a lock of the wool of my sheep, agreeably to your desire, but it is all wrought into cloth, and I must therefore defer it until after the next shearing. You may expect it by some future conveyance. A manufacturer from Leeds, who was lately here, judges it to be of about the same quality with the English wool in general, though there is always a great difference in the fineness of

* Report of Massachusetts Board of Agriculture, 1860.

different parts of the same fleece. I can not help thinking that increasing and improving our breed of sheep would be one of the most profitable speculations we could undertake; especially in this part of the continent, where we have so little winter that they require either no day fodder, or next to none; and where we are sufficiently distant from the frontiers not to be troubled with wolves or other wild vermin, which prevent the inhabitants there from keeping flocks. Though we do not feed our sheep upon leaves, as you mention they do in some parts of France, yet we can not want for pastures enough suitable for them. I am at a loss, therefore, to account for the disproportion between their value and that of black cattle, as well as for our not augmenting the number. So persuaded am I of the practicability and advantage of it, that I have raised near two hundred lambs upon my farm this year. I am glad to find that you are likely to succeed in propagating the Spanish breed of sheep in England, and that the wool does not degenerate; for the multiplication of useful animals is a common blessing to mankind.

Washington sent the wool mentioned in this letter, after his next shearing of 1789, and it was put into the hands of English manufacturers, who pronounced it to be equal in quality to the Kentish wool. The fleeces weighed on an average 5¼ pounds.

In his correspondence at this time Washington expressed the opinion that it was better to raise sheep and black cattle than horses, and on November 22, 1789, in communicating to Governor Beverly Randolph, of Virginia, a proposal of some parties to establish a woolen manufactory in Virginia did not pretend to determine how far the plan might be advisable or practicable, or whether any public encouragement should be given to the enterprise, but he had, however—

no doubt as to the good policy of increasing the number of sheep in every State. By a little legislative encouragement the farmers of Connecticut have, in two years past, added 100,000 to their former stock. In my late tour through the Eastern States I found that the manufacturers of woolens (for the manufacture of woolens is carried on there to a very considerable extent and advantage) preferred the wool raised in Virginia for its fineness to that raised in more northern parts of the continent. If a greater quantity of wool can be produced, and if the hands, which are often in a manner idle, could be employed in manufacturing it, a spirit of industry might be promoted, a great diminution might be made in the annual expenses of individual families, and the public would eventually be exceedingly benefited.

The woolen manufactory referred to in this letter of Washington was that of Col. Jeremiah Wadsworth, at Hartford, Conn., where, between September, 1788, and September, 1789, about 5,000 yards of cloth were made, some of which sold at $5 a yard. Washington records in his diary:

Their broadcloths are not of the first quality as yet, but they are good, as are their coatings, cassimeres, serges, and everlastings. Of the first, that is, broadcloth, I ordered a suit to be sent to me at New York, and of the latter a whole piece, to make breeches for my servants. All the parts of this business are performed at the manufactory except the spinning. This is done by the country people, who are paid by the cut.

George W. Parke Custis records that when Washington was inaugurated President of the United States, April 30, 1789, he was wholly clothed in goods of American manufacture, and he is said to have read his address to Congress in the ensuing January (1790) in a full suit of

broadcloth made at the Hartford factory and presented by the proprietors.

From some correspondence between Washington and some prominent farmers of Pennsylvania, Maryland, and Virginia, seeking information which he was collecting for Mr. Arthur Young, we learn that sheep were worth from 6*s.* to 12*s.*; mutton 3*d.* per pound, and wool 1*s.* per pound. Turkeys were 2*s.* each, and chickens 3*s.* per dozen. He writes again to Young from Philadelphia, June 18, 1792:

Sheep thrive very well in the Middle States, though they are not exempt from diseases and are often injured by dogs, and more so, as you approach the mountains, by wolves. Were we to use horses less and oxen more on our farms (as they do in the New England States), we should, unquestionably, find our account in it; yet, strange as it may seem, few are in the practice of the latter; and none push the raising of sheep to the extent they might and ought to do. The fact is we have, in a manner, everything to learn that respects neat and profitable husbandry.

Bakewell's breed of sheep are much celebrated, and deservedly, I presume; but if intrusted to a common bailiff (or with us is called an overseer) they would, I should apprehend, soon degenerate, for want of that care and attention which is necessary to preserve the breed in its purity. But the great impediment is in the British statutes; these discourage men of delicacy, in this country, from attempting what might involve the master of a vessel in serious consequences if detected in the breach of them. Others, however, less scrupulous, have attempted to import English rams with success, and by this means our flocks in many places are much improved—mine, for instance, though I never was concerned, directly or indirectly, in the importation of one, further than by buying lambs which have descended from them.

Mr. Young, in reply to the various papers sent him by Washington, giving price of land, stock, cereals, and other produce, with the mode and cost of farming, remarks:

You have the unaccountable circumstance, I see, as well as England, of mutton being dearer than beef. Horses, not oxen, being almost universal with us, makes it yet more strange. I know from experiments made with considerable care that if they were at the same price the farmer would have more profit by producing mutton than by producing beef; yet is mutton by many per cent higher priced; but sheep give you another profit in their wool, and a third in their fold. The former with us is infamously depressed in price, but not in America, for your wool at 1*s.* per pound is 33 per cent higher than it would sell for in England. Why, then, surely you should raise those products that sell well, and wool sells better (of course in quantity) than anything else you have. With mutton at 3*d.* per pound and wool at 1*s.* there can be no comparison between sheep and any other application of land. But there must be a market for mutton, and to effect that you should get Bakewell's breed, which fatten so readily on very good land that a common application of it is salting, to use instead of bacon. The provincial assemblies of France have employed smugglers to get (badly chosen) English sheep. Half the kings of Europe have done the same, to get Spanish sheep; both very wisely. I hope your American assemblies will be equally wise and take care that the food produced in the State is applied in the breeds that will best pay for it.

This and other letters on the same subject, which were submitted to Thomas Jefferson, then Washington's Secretary of State, for his comment and information, had such an effect upon that gentleman, who also raised sheep, that he concluded to "push the number of sheep" on his own plantation, acknowledging that he "had never before considered, with due attention, the profit from that animal."

Richard Peters, at Belmont, 6 miles from Philadelphia, could see but little prospect for sheep husbandry. There was no sale for any great quantity of mutton; the people kept too many dogs; the dryness of the season burned up the pasture for a great part of the year, and the long winters rendered their keeping expensive and subjected the animal to numberless disorders. He had tried the English sheep, which stood the climate badly and soon degenerated. As to the fleece, it was scant, 3 pounds per sheep being an overcalculation. Wool was in some demand just then, but it had been unsalable. He was in hopes that manufactures would increase the demand, but the prospect was distant. None were kept, within his knowledge, but in small numbers and as a variety in a farmer's stock. They were close feeders and "destroy pasture prodigiously." Upon this latter assertion Arthur Young makes note that "this idea shows how little they know of sheep."

In a subsequent communication to Washington Mr. Peters expressed the opinion that if the sheep business was carried on to much extent there would be a necessity for exportation. The establishment of considerable manufactures would take off part of the mutton of the flocks, besides using up the wool. There was but little or no export of wool to foreign parts, which was consumed at home, where excellent coarse cloths were made, in which a great proportion of the farmers were clad. A variety of other woolen fabrics was also made. Returning to the subject of the destruction by sheep of pasturage, he knew that they did not eat so much in proportion as other beasts, and their dung was remarkably fertilizing; but they bit close, and the droughts and heats of summer, which were long and periodical, burned up the roots. It was a generally received opinion, in which he concurred, that they destroyed pasture, and it was not found that "the more sheep we keep the more we may;" in fact, the converse was true. In countries where it was an object and where there were better systems of farming with dripping seasons it might be otherwise. But in the state of things at that time (1793) he adhered to his former opinion—that distributing sheep in small numbers to every farmer would do better than any other plan. He knew that better care could be taken of them in that way, for the farmer could and, in fact, did attend to them without interfering too much with his other affairs. Invariably the sheep of the small flocks looked the best and had the most wool. With twenty sheep to each farm capable of supporting them Judge Peters thought we might raise a "prodigious number;" and then he dropped off on to the subject of dogs, "too many being uselessly kept by the wealthy and not a few by poor people, who do not feed them." The law, it was true, gave damages for the loss of sheep by dogs, but the farmers rarely prosecuted these cases; being content with the first loss they preferred losing the value of their sheep than to be fleeced by the lawyers in prosecuting for damages.

Washington was a careful and methodical farmer, keeping strict and minute accounts and adhering to the adage to take care of the pennies

and the pounds would take care of themselves. During his absence from Mount Vernon, while serving as President of the United States, residing at New York and Philadelphia, he exacted weekly reports from his overseer and gave weekly directions as to the management of his estate. He kept a sharp watch on the price of flour at Alexandria and the amount of butter used in the family; cautioned his overseer not to trust the neighbors for the services of his Spanish jackass, and thought some of his slaves ate too much bacon, and that the servant in charge of the butter either used too much of it or sold it at the tavern in Alexandria, when he made the weekly trip to that place to sell small produce and lay in supplies such as sugar, salt, and nails. His frequent references to his sheep are interesting. On April 6, 1794, he writes to Mr. Pearce, his overseer:

I am sorry to find that my chance for lambs this year is so bad. It does not appear to me by the reports that I shall have more than a third of what I had last year. What this can be ascribed to is beyond my comprehension, unless it be for want of rams. Let, therefore, at shearing time, a selection of the best be formed, and otherwise promising ram lambs be set apart (in sufficient numbers) to breed from, and when they are fit for it, cut the old ones and turn them aside to be disposed of. At shearing time, also, let there be a thorough culling out of all the old and indifferent sheep from the flocks, that they may be disposed of, and thereby save me the mortification of hearing every week of their death, which is the more vexatious as I was taught to believe that every indifferent sheep was drawn for this purpose last spring, notwithstanding the loss of them which has been sustained the past winter, and, indeed, unto the present moment.

On June 8, 1794, he writes:

So far has it been from my practice or policy to sell off the forward ewe lambs, that, in order to prevent it, I would not suffer any lambs to be disposed of at all unless it was the very later runts. My plan, while it was in my power to attend to these matters myself, was to be sparing of the lambs, even for my own table, and never to kill the females; to keep the ewe lambs (especially the later ones) from the rams the first year; to separate the rams from the ewes at sh(e)aring time (to be returned at a proper season), and, at sh(e)aring time also, to cull over and remove to a pasture by themselves all the sheep above a certain age, and all such as appeared to be upon the decline, that, after receiving the summer's run, and such aid as could otherwise be afforded them, they might be disposed of to the butchers, reserving enough for the use of the family.

The flock seems to have deteriorated, and Washington writes, May 15, 1796:

I do not now know where to advise you to get supplied with good rams. * * * But this ought not to deter you from the purchase of (at least) one good ram, to go to a score or more of your choicest ewes—from such an experiment and beginning you might, by the year following, have rams enough for the whole flock. This method I pursued some years ago to the very great advancement of my breed of sheep.

On Washington's return to private life in 1797, he found that his sheep, numbering 800 in 1788, and producing 5½ pounds of wool, had dwindled down to not more than 200, producing about 2½ pounds of wool each. While as a rule the mutton of Virginia was deemed excellent, that raised by Washington exceeded all other in its sweetness and delicacy, and was universally extolled by those who had the pleas-

ure to accept the hospitalities of Mount Vernon. The best mutton of the State was originally derived from the sheep of Curaçao, imported many years before and generally extended. The tail was considerd a great delicacy, though not so large as that of the Barbary race. Washington had some fine descendants of this breed, and he mixed into his flock some West India sheep, presented by a gentleman, Mr. Athol, of Antigua; these sheep were perfectly hairy, much resembling deer, and bearing delicious mutton. These tropical strangers soon lost their hair, which was replaced by a soft wool.

As far as their mutton-producing qualities were concerned, Washington's sheep could not be excelled by any south of Philadelphia, and it was when he sought their improvement in the direction of wool that a friend furnished the means of so doing. As early as 1791, there was, in the vicinity of Baltimore, a remarkable breed of sheep, owing its excellence to the importation of Persian sheep and breeding from them on the common sheep of the country. A gentleman of Baltimore County, in a letter of October 19, 1791, says: "I have a remarkable breed of sheep, which hath been produced by adding to my flock a Persian ram. The other day I separated from the rest twelve wethers. These I intend to kill this winter. They appeared so uncommonly fat and large that I was induced to weigh them alive: 154, 177, 188, 181, 168, 157, 168, 174, 155, 172, 152, 169=2,015 pounds," or an average of 168 pounds. The name of the owner is not known, but supposed to be Col. O'Donnell. Be this as it may, in 1797, Col. O'Donnell, of Baltimore, or a Mr. Barry, presented Washington a Persian ram and ewe imported direct from the East Indies. Washington bred from this ram and ewe and also introduced the ram into his flock of fine sheep. Death closed his career before he could give his countrymen the result, but Thomas Diggs, one of his neighbors, gave his opinion that the resulting breed, for American purposes, were far superior to either the Merino or Persian; and although less in size and perhaps weight of fleece, the quality of their wool was fully as good for the fabric of common broadcloths of England as any which had come under his observation in the principal clothing counties of England—Yorkshire, Wiltshire, Gloucester, or Somerset—the last furnishing the finest and most delicate broadcloths and cassimeres.

Washington's live stock was sold in 1802, and the sheep were scattered. G. W. P. Custis purchased some of them, including two imported Leicester ewes and the Persian ram, paying for the latter $50, a sum in those days for a sheep deemed the effect of enthusiasm or folly.* The

*We copy the following from the Washington Federalist, No. 345, July 26, 1802:
"At the late sale of Gen. Washington's stock the following prices were given:

The largest imported bull sold for	$334
The second size	115
Two cows for	205
Imported ram	33
Imported sheep, each	13

ram had not been in the Mount Vernon flocks a long time, but his get had wonderfully improved the form and greatly increased the length of staple in the flocks, and made better mutton.

THE ARLINGTON LONG-WOOLED SHEEP.

The improvement inaugurated by Washington was continued by George Washington Parke Custis, of Arlington, who, from the Mount Vernon stock, "a relic of him whose labors for the happiness and prosperity of his country ceased only with his life," produced a superior sheep, known as the Arlington improved or Arlington long-wooled sheep. Mr. Custis says of the race thus derived that they combined many of the finest qualities desirable in sheep—a wool of great length and fine texture, and a form uniting compactness of body with little offal. These sheep were of good constitution, fed well, and carried fat on the best parts, of good size, and fully sufficient for the generality of pasturage. These qualities could be increased to keep pace with the improvements of the soil; were this not the case, Mr. Custis remarks—

> the race might degenerate for the want of proper keep. When we consider that the same soil which supports the miserable and degenerate race of sheep common in this country would at the same time give nourishment to a superior sort, the advantages of improvement must be evident to every mind. Indeed the whole merit in the science of breeding consists in producing an animal which shall yield the most profit at the least expense. The famous sheep of Bakewell, which rank so high in the scale of European improvements, are remarkable for being good feeders, and deriving sustenance where others would perish. All improved animals have a tendency to fatten from their superior form, and the great object of breeders has been to correct the form so as to dispose of the fat upon the most beneficial parts, and leave the least possible quantity of offal. * * * Our sheep are, generally speaking, lamentably deficient in the desirable qualities just mentioned, their bone being very disproportioned to the weight it has to sustain, and unnecessarily large for an animal which performs no labor. For this reason the farmer complains of his mutton not bringing him a good price, but the butcher who disposes of it by the pound very wisely calculates the weight of his purchase, and does not buy from appearance alone. Thus a sheep, to appearance very large, may weigh but very little. From a slight view of the necessary requisites in breeding improved stock for the market, I again return to the more patriotic considerations of the fleece, having barely called in the preceding remarks to aid the cause.

Mr. Custis bred the Arlington long-wooled sheep with particular reference to the market, so as, if possible, to leave no exception to the general introduction of their fleece, and the manner in which he went to the improvement of his sheep he has left on record. The Persian from whence this stock was originally derived, carried a wool of great length, but coarse, yet possessed a high form and good constitution. Upon this long wool and good form Mr. Custis engrafted the fine and thick wool of Bakewell, his capital premium ram of 1805, and invariably bred this ram upon his descendants, thus following the doctrines introduced and practiced at Dishley as far as then known. Previous to the institution of the premiums in 1805, he had so far succeeded in the improvement of his own domestic stock as to produce a very capital ram, which

at the shearing of April, 1806, had wool measuring 14 inches on the back, and whose size was also very great. This capital sheep was transferred to the White House in the county of New Kent, Va., where his long-wooled race was improved by crossing on it animals of finer quality in the fleece. Mr. Custis thought that he had rather reversed the usual practice, and started a new system, in commencing with the long though coarse wool, but he found it attended with the happiest effects, and ventured to recommend it as the more speedy and certain method of breeding fine long-wooled sheep. The Arlington Improved, derived from the same source, lost nothing in the fineness of their wool by being originally descended from ancestors whose fleece was less fine. On the contrary, Mr. Custis argued that, unless a race so desirable as theirs could be had at once, the best method would be to rear one upon the foundation of coarse long-wooled sheep. If breeding were pursued from the fine, yet short-wooled sheep alone, very many causes would necessarily occur before the staple could be lengthened, and the quality at the same time retained, but in founding a stock upon long-wooled the material quality of length would be possessed at once, and with it probably fineness. William H. Foote, of Hayfield, had a hornless ram of the Arlington Improved, and from this ram, which was a very superior one, and some fine breeding ewes at Arlington was formed the foundation of a flock from which went some fine animals to various parts of Virginia and Maryland.

Bakewell, the prize ram of one year old, bred by Col. Thomas L. Lee, of Loudoun, was exhibited at Arlington sheep-shearing April 30, 1805, where he was shorn. The weight of his fleece was 12 pounds, 5 ounces; gross weight of carcass, 140 pounds; the ordinary length of his wool was 11 inches; extreme length, 13 inches; the extreme length of the animal, from the nose to the buttock, was 4 feet, 9 inches; girth of body, 3 feet 7 inches, and length of foreleg, from the brisket to the ground, 12½ inches. These measurements were made after shearing. It was hoped that after anointing him, a method very prevalent in Europe, his fleece the next year would reach 16 pounds. Mr. Custis tersely describes him as a lengthy sheep, short legs, no horns.

Four ewes shown by Mr. Custis at this time, and bred by him from the imported ram upon the improved Mount Vernon breed, sheared respectively 7½, 7½, 6¾, and 6½ pounds of wool. A ram lamb 2½ months old weighed 87½ pounds.

Although these weights appear but small when compared with the English stock, yet, when the scale of improvement between the two countries is balanced, and the subject considered comparatively and with due reference to the progress and means of improvement in each, they will appear even respectable in the country the most distinguished in the world, and in which the science of agriculture and rural economy had been carried to an extent unparalleled.

At the annual meeting and sheep-shearing, April 30, 1806, many gen-

tlemen attended from the adjoining counties, and the premium for the finest ram lamb of one year old was adjudged to a lamb bred by Ludwell Lee, of Belmont, Loudoun County. This prize lamb, part Bakewell and part Arlington Improved, possessed fine proportions, with a fleece of good quality, close and well packed, though rather short. His gross weight was 161 pounds, weight of fleece, 7¾ pounds. The fleeces of the season ran light, owing to the mildness of the preceding winter. The fleeces of the Arlington prime ewes averaged 5 pounds.

Mr. Custis inaugurated these annual sheep-shearings for the benefit of his country. At an early period he became much interested in the improvement of the breed of sheep. Col. Humphreys, the American minister at Madrid, had recently introduced the fine-wooled Merino sheep into the United States. Mr. Custis saw the great advantage that his country might derive from the cultivation of fine wool, and the establishment of manufactures of cloth, and in 1803 inaugurated an annual convention for the promotion of agriculture and domestic manufacture, known throughout the country by the name of Arlington sheep-shearing. These gatherings were at Arlington springs, a large fountain of living water that gushed from beneath the shade of a venerable oak, not far from the banks of the Potomac. There, for many years, on the 30th of April, the annual shearing took place. A large concourse of people would assemble to participate in or witness the ceremonies. Toasts were drank, speeches were made, and prizes, provided at the sole expense of Mr. Custis, were distributed among those who presented the best specimens of sheep or wool, and domestic manufactures. These were, it is believed, the first prizes ever offered for such objects in the United States. Under the great war-tent of Washington, many of the noblest men of the land assembled on these festivals, when they and the entire concourse were entertained in a most generous manner by the host, who usually made a stirring speech appropriate to the occasion. In one of them he said, prophetically: "America shall be great and free, and minister to her own wants by the employment of her own resources. The citizen of my country will proudly appear when clothed in the produce of his native soil." It must be remembered that, at that time, every yard of broadcloth worn in the United States was imported from Europe.

In May, 1807, four lambs of the Arlington Improved Long-Wooled breed were brought to the shearing, all bred from the Bakewell prize ram of 1805.

A one-year-old ewe, whose carcass weighed 7½ pounds to the quarter, sheared 7 pounds of wool 9 inches in length.

A one-year-old lamb, weighing 10½ pounds to the quarter, sheared 7½ pounds of fleece, wool 9 inches in length.

A ewe lamb, one year old, whose carcass weighed 8¼ pounds per quarter, gave 5½ pounds of fleece, 8 inches in length.

A ram lamb, one year old, whose carcass gave 11 pounds per quarter, gave 7½ pounds of fleece, 8 inches in length.

In the shearing of the following year (1808) the result was thus given:

	Gross weight.	Length of wool.	Product.
	Pounds.	*Inches.*	*Pounds.*
First	85	13	5¼
Second	78	15	5¼
Third	100	11	6¼
Fourth	85	8	5
Fifth	98	11	6¼
Sixth	78	13	6¼
Seventh	70	10½	5¼
Eighth	78	12	5¼
Ninth	76	12	6¼

These were all shearling ewes and each had produced a lamb which she was then suckling. The average shows a pound of wool for every 14 pounds 7 ounces gross weight of carcass, while one of the old-fashioned sheep, weighing 158 pounds gross, produced 5¼ pounds of wool, or one pound of wool for every 30 pounds gross weight of carcass.

At this shearing Lawrence Lewis, John Tayloe, Hayward Foote, and William Alexander, all gentlemen farmers, showed one-year lambs.

Lawrence Lewis, of Woodlawn, Va., exhibited Dishley, his sire, of the Arlington long-wooled race, bred by Mr. Custis; weight on the hoof, 140 pounds; weight of fleece, 6¼ pounds.

Hayward Foote, of Hayfield, Va., lamb Badger, of the Arlington long-wooled race; weight on the hoof, 105 pounds; weight of fleece 9¼ pounds.

John Tayloe, of Mount Airy, Va., showed a lamb called Superb, his dam a ewe of Col. Dorsey's stock (well known), by a ram of Tayloe's own breed; weight on the hoof, 130 pounds; weight of fleece, 8¼ pounds.

William Alexander, of Preston, Va., showed lamb Preston, of the home breed; weight on the hoof, 149 pounds; weight of fleece, 7¼ pounds.

Tayloe's lamb was 2 feet 8¼ inches high, and 5 feet 10¼ inches in length.

Alexander's lamb was 2 feet 5¼ inches high, and 5 feet 10¼ inches in length.

The Dorsey breed here mentioned seems to have been a local variety, confined to the country lying between Washington and Baltimore. It had its origin, apparently, with Col. Dorsey, and, from the meager accounts we have of it, was a superior mutton sheep. A shearing of 7 ewes, a cross on this breed and the Calvert County breed, took place at Rose Mount, Prince George County, Md., on May 25, 1809, with the following result:

	Pounds.
5 ewes, 1 year old, fleece each	6¼
1 ewe, 1 year old, fleece	8
1 ewe, 3 years old, fleece	7¼

The wool was clean and of good quality, and the lambs made prime mutton. They were easy feeders, not remarkable for size, but well formed and particularly noted for their clean wool.

At the next annual shearing, April 29, 1809, 3 tup lambs were shorn for the premiums:

	Weight on hoof.	Weight of fleece.
	Pounds.	*Lbs. ozs.*
William Fitzhugh, Ravenwood, Va., Columbus	130½	*5 5
Dr. W. A. Daingerfield, Notley Hall, Md., Herne Tooke	132	†8 9
John Scott, Strawberry Hill, Va., Palafox	165	†5 13

*Washed. †Unwashed.

The premium was awarded to Palafox.

At the sixth anniversary of the Arlington sheep shearing, April 30, 1810, sheep were shown, but not of notable character either as to size, form, or fleece; but as indicating the interest in domestic manufactures it may be stated that many ladies of Virginia and Maryland exhibited home-made yarns, stockings, and cloth, and the Alexandria Gazette reports that "a ball of woolen yarn, exquisitely spun, and weighing a pound, was sold for the enormous price of $4."

At the seventh annual shearing, April 30, 1811, four tup lambs were shown, but one only was of native blood, Coton, bred and exhibited by Mrs. Lee, of Loudoun County, Va. The weight of this lamb, unshorn, was 145 pounds, and it gave a fleece of 8 pounds of unwashed wool. Three mixed-blood Merinos were shown, and for purpose of comparison their weight and yield of wool is given:

	Weight, unclipt.	Fleece.
	Lbs. oz.	*Lbs. oz.*
D. McCarthy Chichester, Fairfax County, Va., showed Columbus, one-quarter Merino	111 5	6 4
John C. Scott, Fairfax County, Va., showed Fairfax, one-half Merino	94 0	6 0
George Mason, Gunston Hall, Va., showed Gunston, one-quarter Merino	123 8	6 3½

All the fleeces are given as unwashed, and the premium was awarded to John C. Scott's Fairfax for the largest proportion of fine wool to the carcass.

And here, digressing but slightly from the Arlington shearings, it is well to put on record some figures, as shown at the fair of the Columbian Agricultural Society of Georgetown, held within rifle-shot distance of Arlington, and having the same patrons, with similar objects in view. At their fair May 16, 1810, 22 lambs of the common breed were exhibited, and the three best are thus recorded:

(1) Weight, unclipped, 53 lbs. 5 ozs.; weight of fleece, unwashed, 4 lbs. 13 ozs.
(2) Weight, unclipped, 83 lbs.; weight of fleece, unwashed, 3 lbs, 14 ozs.
(3) Weight, unclipped, 135 lbs, 8 ozs.; weight of fleece, unwashed, 6 lbs. 12 ozs.

These three received the premiums as to quantity of wool and quality in proportion to carcass.

At the fair of this society held at Georgetown, May 15, 1811, five candidates entered for the premium for fine-wooled sheep.

	Gross weight.	Weight of fleece.
	Pounds.	*Pounds.*
Gen. Mason's Potomac Chief	103½	6½
Thomas Peter's Montgomery	84½	5½
Basil Darby's Jack	131½	9½
R. Brooke's Hopewell	93½	4½
Mr. Chichester's	94½	5½

These were all of the Merino breed, and the weight of fleece is given as unwashed. The premium for the best was awarded to Mason's Potomac Chief, of Humphreys breed, and the second premium to Brooks's Hopewell, a half-blood Merino ram of Dupont's breed.

The candidates for the long-wooled premiums were seven in number:

Mr. Marbury's ram lamb, 160 pounds, washed; fleece, 7 pounds 6 ounces.
Mr. Gibson's ram lamb, 130 pounds, unwashed; fleece, 7 pounds 6 ounces.
William Bowie's ram lamb, 121 pounds, washed; fleece, 11 pounds 12 ounces.
Bazil Darby's ram lamb, 131 pounds, washed; fleece, 9 pounds 5 ounces.
I. Duckett's ram lamb, 111 pounds, washed; fleece, 8 pounds 12 ounces.
I. Duckett's ram lamb, 121½ pounds, washed; fleece, 8 pounds 9 ounces.
Gibson's Pizarro, ram lamb, 120½ pounds, unwashed; fleece, 7 pounds.

Jacob Gibson received the first premium for a two-toothed ram lamb of long-wooled breed for his long-wooled ram Pizarro of the Calvert County breed. The second premium of $40 for a two-toothed ram lamb of the long-wooled breed was awarded to William Bowie, of Prince George County, Maryland, for his long-wooled ram of the common breed.

At the fair of the same society held May 22, 1812, the premiums for the long-wooled sheep were awarded to Calvert's lamb weighing 108 pounds, with a fleece of 12 pounds 6 ounces, and to William Marbury for a sheep weighing 157 pounds 8 ounces, carrying a fleece of 11 pounds 14 ounces.

From this digression to the sheep of his neighbors we return particularly to those of Mr. Custis, of Arlington. In the improvement of his sheep Mr. Custis tells us that he had in view the most wool for the least flesh, and bred upon that idea. Wool being in his eye the national, the patriotic, the useful object in view, all other considerations gave place to its superior merits, and he strictly adhered to the principle that the sheep which yielded most wool for least body was the best and most desirable animal for the country. To the argument that he should abandon this idea and give more size to his stock he replied: "He that breeds beyond his pasturage is like him that lives beyond his income, and invites ruin upon himself and his descendants." His pasturage, though indifferent, was yet better than most, and its situation admirably adapted to sheep by possessing variety and soundness, and hills which afforded good places for repose. Bakewell, the premium ram of 1805, used by Mr. Custis after that date, weighed 150 pounds, and yielded 12 pounds

5 ounces of excellent wool. He had a superior form and his lambs proved his value. It was by means of this superior sheep that Mr. Custis bred away the hair of his improved Persian stock and at the same time retained the length, by which it resulted that the stock had the qualities of much wool of great length, good texture, and a good form, together with size adapted to most of our soils, and not too large for any.

In the year 1808 Mr. Custis issued a prospectus or "plan for disposing of the Arlington improved sheep, so as to promote the woolen manufacture of the United States, and thereby advance the most important interests of our country." He proposed to sell one hundred lambs, at $20 each, and invest the money in a fund, the interest of which should be appropriated to an annual premium for the benefit of the American woolen manufacture. The premium was to be given for the best ten yards of American manufactured broadcloth, to be made of American wool alone, to be the width of the best European broadcloth, and of a national blue color, and the premium was to continue as long as the present form of the American government shall exist. And of so much importance was the matter conceived to be that two of the four judges to award the premium were to be appointed by the President of the United States, who was to have one-fifth of the premium cloth. The laudable desires of Mr. Custis were but partially realized as far as the Arlington sheep were concerned, for now we begin to see at his shearings Merino sheep which carry off all the first premiums and eventually drive his sheep from public favor, which, however, they partially regained in later years. They were not generally appreciated by the farmers of Virginia and Maryland, and Mr. Custis was so disgusted with this want of appreciation that when Chancellor Livingston, in 1810, offered him some half-blood Merinos for the improvement of his sheep, particularly those of Smith Island, soon to be noted, he declined the generous offer on the ground that his efforts to assist his native State had been so little regarded that it would be an injustice to accept a gift likely to be so little appreciated, and that would do much more good elsewhere. He did, however, accept from Chancellor Livingston a Merino ram, full-blooded, having, as he said in May, 1810, "long since conceded his partiality for the Merino" and was "desirous of promoting that valuable race."

The effect of the Merino breed now being adopted throughout the country is shown in the eighth anniversary of the Arlington sheep shearing, April 30, 1812, when the following rams received premiums:

Alphonso.—Owned by L. Lewis, of Woodlawn, Va., one-half Merino, weight, 114½ pounds; wool, 5 pounds, washed.

Roderick Dhu.—Owned by George Mason, of Gunston Hall, one-half Merino, weight, 129½ pounds; wool, 9 pounds 12 ounces, unwashed.

Don Roderic.—Owned by Thomas Peter, District of Columbia, three-fourths Merino, weight 92½ pounds; wool, 5 pounds 7 ounces, unwashed.

Mount Vernon.—Owned by W. A. Daingerfield, Notley Hall, Md., one-fourth Merino, weight 111 pounds; wool 5½ pounds, unwashed.

Four ewes of the same Arlington Improved were shown and received prizes. Two, owned by Mr. Daingerfield, weighed each 98½ and 89¾ pounds, and sheared respectively 5 pounds and 8 pounds 12 ounces of unwashed wool. Two owned by L. Lewis weighed 60¾ and 75 pounds each, and sheared respectively 4 pounds 8 ounces and 4 pounds 1 ounce of washed wool.

The shearings at Arlington were continued for a few years, when the thieves and dogs made such havoc with Custis's beautiful flock that it was reduced to two. These, in the language of the owner, "long ranged over the hills of Arlington in solitary state."

The imported Persian ram and ewe purchased by Mr. Custis at the sale of Washington's stock in 1802 both died at Arlington, leaving for breeding in fact but one pure-bred ram, which was sent to the estate of George Calvert, at Riverdale, near Bladensburg, Md. Calvert bred from this and raised some very fine sheep, and we find that in May, 1812, the Columbian Agricultural Society, at Georgetown, awarded him a premium of $60 for the best two-toothed ram lamb of the long-wooled breed, for his ram lamb of the Persian breed crossed on the sheep of the country.

While it is true that no full-blooded descendants of the Arlington sheep are now known, it is nevertheless the fact that they did much to improve the sheep of Virginia and have left their traces, distinct and healthy in some cases, but generally showing a deterioration unless crossed with modern improved breeds. A writer in Niles's Register, in 1814, states that Mr. Custis, of New Kent, Va., had recently sheared from the backs of two sheep of the Arlington long-wooled sheep, 21 pounds and 2 ounces of excellent wool, for which he deserved great praise for his perseverance and attention to this most useful breed of sheep, "of far more importance than the Merino as bearing wool of the proper quality for the ordinary clothing of the people at large, blankets, etc."

Another locality in Virginia where the Arlington sheep attained much popularity was in Loudoun Valley and Shenandoah Valley, and it maintained its position for many years, and in 1824 it was, with the Merino and Tunis sheep, considered as most noted and valuable. There is preserved an account of a sheep-shearing in 1824, in the Shenandoah Valley:

	Pounds.
9 fleeces full blood or seven-eighths Merino	58½
8 fleeces Arlington long-wool, cross	73½
8 fleeces Arlington long-wool cross	55½
8 fleeces Arlington long-wool cross	66½
8 fleeces Arlington long-wool cross	56½
8 fleeces Arlington long-wool cross	62¾
49	374¼

Average weight of the Merino fleeces 6½ pounds, unwashed; average weight of the Arlington long-wool cross, $7\frac{9}{10}$ pounds, unwashed.

These Arlington sheep yielded a pound of wool to every 14 pounds 7 ounces of carcass, while the old country kind yielded only a pound to every 30 pounds gross weight.

Mr. Custis took great pride in his sheep and in his annual shearings, and embraced every opportunity of calling the attention of his countrymen to the importance of sheep husbandry and of home manufactures. When the difficulties growing out of the European wars were cutting off our usual supplies from abroad, and the public attention was being turned to home manufacture, he wrote and published in 1808 "An Address to the People of the United States on the importance of encouraging Agriculture and Domestic Manufactures." In this little work he gave an account of the improvement of the Arlington sheep, also a statement of the sheep on Smith Island, which he claimed had much credit for good wool.

THE SMITH ISLAND SHEEP.

These sheep roamed perfectly wild on an island of the name lying off the coast of Virginia, near the capes. The island contains between 3,000 and 4,000 acres, and one-half of it was woodland when Mr. Custis wrote. The origin of the sheep inhabiting this island is unknown; they were probably put there about 1780, and fostered and improved by the hand of nature, for, that its wool was superior to the average wool of Virginia seems to admit no doubt. It was even described as the first in the world, and as exciting the praise and astonishment of all who saw it. In 1807 James Madison says of the fleece: "I have always considered them as among the best in point of fineness, though not of weight, which the American flocks yield." It was longer than the Spanish, being in full growth from 5 to 9 inches in length, and in some instances, much more. In quantity it was vastly superior, the sheep yielding twice as much, and frequently more. If the Merino exceeded it in fineness of grain, yet the island sheep carried wool so fine as to answer every purpose to which the other could be appropriated, and so much larger in quantity as to yield a better profit to the breeder.

The soil of Smith Island, though sandy, was in many parts extremely rich and productive of a succulent herbage, which supported the stock at all seasons, and this, completely sheltered by the wood, was not parched in summer nor frozen in winter, thus preserving forage the year round. Along the coast also were abundant scopes of pasturage, producing a short grass in summer, which was peculiarly grateful to the palate of the sheep. In addition to the grasses of the inland glades and of the coast were various shrubs and plants, particularly the myrtle bush, upon which the animals appeared to browse with great relish. Access to salt was a great advantage. The stock on the island were wild cattle and sheep principally; hogs were prohibited because they destroyed the lambs; and of some horses put on to breed many years before, but two remained in 1808. The sheep

as well as the cattle were perfectly wild, and so unconscious of the care of man as to fly at his approach. They were taken twice a year, spring and fall, by certain stratagems, and sheared at each time, after which they were again turned loose. The wool compared very favorably with that of the Merino and many fabrics manufactured from the latter at a great price could be made from the former for much less. It was as white as snow, and perfectly silky and soft to the touch, and of delicate grain. Their flesh was very highly flavored and popular; whether this would continue if the animals were domesticated was doubted, since the flavor was thought to be due both to habits and food. The bone was remarkably small and they weighed well and fattened sooner than sheep of other kind.

At one time Mr. Custis proposed founding a breeding station on Smith Island for the improvement and dissemination of these sheep, and issued an elaborate prospectus calling attention to their great value in all parts of the country, particularly in the southern latitudes of Virginia, the States of Kentucky, Tennessee, Mississippi, and all southward thereof. Upon the sea islands of Georgia and the Carolinas it was thought they might be pastured to great advantage, and very many situations then lying idle and unprofitable could be turned to use by the introduction of this valuable race of animals. They were so active in pursuit of food that they could cover a great space of ground in a very short time, and would browse upon many plants ordinarily converted to no use whatever. Finally, in situations similar to their native island, they could be supported without any expense, and where the climate was colder and the pasture less abundant they would be found to subsist at least as well as any other species. But nothing came of the proposition. Early in 1802 the number of sheep on the island was between 500 and 600, but depredations and other casualties very much reduced these figures by 1805, and still more by 1808. They rapidly decreased after that time, and the variety became extinct. The Arlington long-wooled had a longer existence, and was perpetuated to a much later day. A variety founded upon it now invites consideration.

FREDERICK SHEEP.

The Frederick sheep, so called from the county in Virginia where they were bred to a great improvement, were a large and valuable variety, bred by R. K. Meade. They were a cross of the Merino upon the Arlington long-wooled sheep. In 1808 a number of the farmers of Frederick County associated for the purpose of encouraging domestic manufactures and improving the breed of sheep. Before this little attention had been paid to either of these objects. Some families had made coarse clothing, and a few farmers had made some slight efforts to improve their flocks; but the most of them viewed their sheep as a stock of little value, and ran to the stores for all their clothing. At the first annual meeting on May 22, 1809, Richard K. Meade was the only member who had a

lamb that he was not ashamed to show. He exhibited one that weighed on foot 159 pounds and produced a fleece of 9 pounds 6 ounces of washed wool. On May 21, 1810, the second annual meeting was held, when five lambs were shown.

	Weight on foot.	Fleece.
	Pounds.	*Pounds.*
David Ridgeway's lamb	180	9½
Richard K. Meade's lamb	156	9
Dr. Robert Mackay's lamb	169	8½
Philip Nelson's lamb	160	8½
Do	134	8½

The fleeces from these lambs were weighed in the dirt. They were, however, unusually clean. Mr. Ridgeway's and Dr. Mackay's were about quarter-blooded Barbary. Mr. Meade's and Mr. Nelson's were from Mr. Custis's Bakewell. Three months after this Mr. Ridgeway weighed two of his lambs, twins, at five months old. One weighed 115 pounds, and the other 116 pounds. There were descendants of his prize ram, weighing 180 pounds. The wool of the Barbary sheep of Frederick County was vastly superior in point of quality to the native wool.

At the exhibition on May 28, 1811, the sheep showed an improvement. The weight of the sheep on the hoof and that of their fleeces are again given:

	Weight on the hoof.	Weight of fleece.
	Pounds.	*Pounds.*
D. Ridgeway's lamb	185	*10½
Do	187	*8½
Do	176	*8½
Richard K. Meade's lamb	165	*8½
Do	166	*8½
Do	166	*8½
P. Nelson's lamb	124	†15½
	164	†17½

* Unwashed. † Washed.

D. Ridgeway was awarded the first premium of $30 for his 185-pound lamb for size, form, quantity and quality of wool, and Mr. Meade was awarded a premium of $30 for the "greatest average quantity of wool shorn from the whole of his flock, consisting of 50 head at least." Mr. Meade had 91 head of sheep, and they averaged 5 pounds 3 ounces of washed wool.

In 1828, Mr. Meade published a statement in a Winchester, Va., paper, from which we learn that his flock was built upon the remnants of an English breed imported before the Revolution (and highly celebrated for mutton qualities), crossed by the Arlington long-wooled, improved by Mr. Custis from the Persian stock of Mount Vernon. When he began the improvement he had 124 sheep, averaging 8½ pounds of wool too long for ordinary purposes. The flock was next crossed by the large French and small Spanish Merino, until, during the fine-wool

mania, it was found that too great a sacrifice had been made in that direction. This error was rectified by introducing into the flock some of the progeny of that remarkable sheep, Frederick Bakewell, weighing 200 pounds. The lost mutton and wool were thus restored, and a system of in-and-in breeding was followed until 1828, when Mr. Meade thought he had established a permanent, valuable variety, and offered it to the country.

At that time the sheep presented a fine form; the carcass averaged about 165 pounds of good palatable flesh. The rams produced 13½ pounds of wool; the average of a flock of one hundred was 8¾ pounds. One ram lamb of first shear produced 14 pounds of wool; his carcass weighed 162 pounds. From a later statement by Mr. Meade, July 22, 1831, we learn that his whole flock that year, 130 in number, averaged 8 pounds of wool; that 28 sheared an average of 10½ pounds each, and some of the heaviest fleeces weighed 16½ pounds. Mr. Meade continued the improvement to the time of his death, February, 1833, and his sheep became deservedly popular and were becoming widely disseminated through the Shenandoah Valley in Virginia, the Catoctou Valley in Maryland, and the Cumberland in Pennsylvania. Some found their way into other parts of Virginia and Maryland, and into Ohio. Several years after Mr. Meade's death sheep bred from his flock gave fleeces weighing as much as 18 pounds each.

A ram and five ewes of this variety, direct descendants of Mr. Meade's flock, were weighed and sheared at Spout Run, Clark County, May 18, 1839, with the following result:

	Weight of carcass.	Weight of fleece.
	Pounds.	*Pounds.*
Ram	174	5
Ewe	198	5
Ewe	174	6
Ewe	160	7
Ewe	164	5
Ewe	164	5

Only two of these were considered above the average of the flock from which they were taken. The wool was clean washed, and the ewes were all suckling lambs. The ram was a yearling.

Far different from the Arlington sheep and from this valuable improvement upon it, beautiful to look upon and eminently useful, was a breed of cripples which now claims our attention.

THE ANCON OR OTTER SHEEP.

Seth Wright, who owned a small farm on the banks of Charles River, about 16 miles from Boston, kept a little flock of common sheep composed of 1 ram and 15 ewes. In the year 1791, one of the ewes produced a male lamb of singular appearance, differing, for no assignable

reason, from its parents by a disproportionately long body and short bandy legs, whence it was unable to emulate its relatives in their scaling the neighbors' fences and luxuriating in forbidden pastures. The neighboring farmers recognizing this excellent characteristic of the new sheep, advised Mr. Wright to kill his old ram and reserve the younger one for breeding, which advice was followed. The first season, two lambs only were yeaned in his likeness. In the following years, a number more, distinguished by the same peculiarities. Hence proceeded a strongly marked variety in this species of animals, before unknown in the world. It was called by the name of the Otter breed. This name was given from a real or imaginary resemblance to that animal, in the shortness of the legs and length of the back, supposed by some to have been caused by an unnatural intercourse; by others, perhaps as fancifully, from fright during gestation. It is only certain that otters were then sometimes seen on the banks of this river. They have since disappeared.

Dr. Shattuck, who in 1811 dissected one of these sheep for the purpose of ascertaining the properties and qualities which distinguished them from the common kind, says that the sheep weighed, just before it was killed, 45 pounds. The most obvious difference in its skeleton from the skeleton of the common sheep, so far as a superficial observation extended, consisted in the greater looseness of the articulations, the diminished size of the bones; but more especially in the crookedness of its forelegs, which caused them to appear like elbows. Dr. Shattuck called them *ancon*, from the Greek word which signifies elbows. On dissecting the sheep he could not forbear noticing the comparatively flabby condition of the subscapularic muscles, which would partially account for the great feebleness of the animal and its consequent quietude in pasture. The inequality of form seemed to be confirmed in the blood. Experiments in crossing changed the strain, or, to allow the expression, amalgamated the qualities of those of other breeds, so as to produce a mixed or mongrel race in too few instances to form an exception to the theory. Col. David Humphreys, of Connecticut, who reported this singular animal to the Philosophical Society of England, said that when both parents were of the Otter or Ancon breed, the descendants inherited their peculiar appearance and proportions of form, and he had heard of but one questionable case of a contrary nature. The small number of cases where the young were said to partake in part, but not altogether, the characteristics of their breed, would not invalidate the general conclusions established on experience in breeding from a male and female of distinct kind. When an Ancon ewe was impregnated by a common ram, the increase resembled wholly either the ewe or the ram. The increase of a common ewe, impregnated by an Ancon ram, followed entirely the one or the other, without blending any of the distinguishing and essential peculiarities of both. The most obvious difference between the young of this and other breeds consisted in the shortness of the legs of the former; which, combined

with debility or defect of organization, often made them cripples in mature age. Frequent instances occurred in which common ewes had twins by Ancon rams, one of which exhibited the complete marks and features of the ewe, the other of the ram. The contrast was rendered singularly striking when one short-legged and one long-legged lamb, produced at a birth, were seen sucking the dam at the same time. The Ancons kept together, separating themselves from the rest of the flock when put into inclosures with other sheep. The Ancon lambs were less capable of standing up to suck without assistance, when first yeaned, than others. Here, then, was a remarkable and well-established instance, not only of a very distinct race being established, but of that race breeding true at once, and showing no mixed forms, even when crossed with another breed. By taking care to select Ancons of both sexes to breed from, it became easy to establish this well-marked race, and there is every reason to believe it could have been prolonged, had circumstances demanded it.

Although the Ancons arrived somewhat later at maturity they were said to live as long as those of our common flocks, unless in some cases where by reason of their debility and decrepitude their health was impaired and their lives shortened. To whatever cause it may be attributed, whether arising from defect in vertebræ, muscle, joint, or limb, it is certain that they could neither run nor jump like other sheep. They were more infirm in their organic construction, as well as more awkward in their gait, having their forelegs always crooked, and their feet turned inward as they walked. It was also observed that the rams were commonly more deformed than the ewes.

This breed was looked upon as a valuable acquisition from the fact that they were less able than others to get over fences. In New England, beyond which they rarely migrated, there were few commons, no hedges, no shepherds, and no dogs whose business it was to watch flocks. The small farms were inclosed by wooden and stone fences. These were generally too low to prevent active sheep from breaking out of pastures into meadows or grounds under cultivation. Crops were injured and farmers discouraged. Hopes were entertained that this would be remedied, and these hopes were partially realized.

On the other hand, the drovers complained of the great difficulties of driving these cripples to market, and the butcher that the carcass was smaller and less salable than the common sheep. It was commonly not so fat. It did not fatten so readily, owing, probably, to less facility in moving about for gathering food. In taste it differed but little from other mutton.

There was much variation in the fleece, not exceeding in quality and quantity that of the common sheep, that from a cross of an Ancon ewe and Merino ram being very silky and of the general quality of a quarter-blood Merino. Daniel Holbrook, Derby, Conn., made some experiments with this sheep and the Merino which are of interest and must

be quoted entire. His statement was given to the public in October, 1805.

In the year 1800 I purchased a pair of sheep called the Otter breed. This breed of sheep are well known by some, but I presume are unheard of by many others. They generally have long, round bodies, thick necks and breasts, broad hips, very short legs that stand wide apart and some of them bend outwards. They can not run or leap fences as well as others, and mine have about the same quantity of wool as the other kind, and some finer. My lambs by those rams with other sheep have generally been either of the Otter or common kind, but in some instances they partake partly of the shape of both, and I think these ameliorate the breed. In October, 1802, I obtained one of the Spanish Merino rams imported by Col. Humphreys, and put him with part of my sheep, and by this means in the spring of 1803 had some of the half-blooded lambs. Soon after these lambs had come, I put them and their dams with my other sheep and lambs and kept them together through the summer, and in the fall separated these lambs with my others from the old sheep, and to keep them through the winter. In the summer they were manifestly different, and they wintered much better than my other lambs that lay with them, and at shearing yielded one-fifth more in weight of wool on an average than my other sheep, and the quality far superior. The wool was spun in my own family. It was carded and made into cloth at Col. Humphreys' mill, and was pronounced equal to the best English broadcloth at from $6 to $6.50 per yard.

The Ancons were widely disseminated in New England at the beginning of the present century and their numbers large, but on the introduction of the Merino they rapidly declined and were represented in 1876 by a small flock of 8 in Rhode Island. It had been perpetuated through many generations during a period of eighty-five years.

The perpetuation of this Ancon variety by the hand of man is one of the facts adduced by Darwin to show that man can by selection cause great variation in animals under domestication; can mold an accidental variety into a permanent one, in fact. From this and other similar facts he lays down a proposition which should never be lost sight of by the intelligent breeder and upon the due observance and application of which much of his success depends:

Although man does not cause variability and can not even prevent it, he can select, preserve, and accumulate the variations given to him by the hand of nature almost in any way which he chooses; and thus he can certainly produce a great result. Selection may be followed either methodically and intentionally, or unconsciously and unintentionally. Man may select and preserve each successive variation, with the distinct intention of improving and altering a breed, in accordance with a preconceived idea; and by thus adding up variations, often so slight as to be imperceptible by an uneducated eye, he has effected wonderful changes and improvements. It can, also, be clearly shown that man, without any intention or thought of improving the breed, by preserving in each successive generation the individuals which he prizes most, and by destroying the worthless individuals, slowly, though surely, induces great changes. As the will of man thus comes into play, we can understand how it is that domestic races of animals and cultivated races of plants often exhibit an abnormal character, as compared with natural species; for they have been modified not for their own benefit, but for that of men.*

The decade from 1800 to 1810 constituted an era in American prog-

* "The variations of Animals and Plants under Domestication." Charles Darwin.

ress. The wars of Europe and the consequent disturbance of American commerce stimulated domestic manufactures and renewed the disposition to improve the breed of sheep. The idea found expression in the papers of the day and in the formation of societies for encouraging agriculture, more particularly that branch of it relating to live stock. One great impediment to the increase of sheep had been the antipathy of Americans to mutton as an article of food; an antipathy naively admitted by Tench Coxe, in 1794, when he contended that it was best for "seminaries of learning and poorhouses, and should be given by rule." Mutton was appreciated by the more opulent classes of the towns and the country, but it was not popular with the masses and the yeomen of the country, for a prejudice had been generated that it was the poor man's food, and that its presence on his table was an indication of his poverty. This prejudice, singularly enough, was more marked among small farmers than elsewhere, who ate fat pork the year round, but who, though possessing from ten to twenty sheep, looked for troublous times ahead if they could see the bottom of the pork-barrel. The papers combated this prejudice, admitting that the people of the country had generally a dislike to mutton, because what Æsop said of tongues was true with respect to mutton, "if it is good, it is the best of animal food; if bad, good for nothing." It was pointed out that to incline the people to eat mutton it was necessary to have a good breed of sheep, and to have a good breed of sheep it was necessary that the people should eat mutton. Which of these ought to be considered the cause and which the effect was left to speculation, but it was urged that sheep should be raised for the sake of the wool. A good annual fleece would pay a sufficient rent for the pasture, and if the flesh were sold cheap the poor would soon relish it, especially as it would every year become better by the improvement made on the breed. Then should the wool be protected by a duty, flannel would be a very profitable manufacture to begin with, and thus it would come about that while the manufacturer was eating the farmer's mutton he was also making in return the clothing for the farmer's family. Variations on this theme filled the papers from Massachusetts to Georgia.

The improvement from 1800 to 1806 was very marked, and farmers took a pride in furnishing the papers with the weight of their sheep and their fleece and the excellence of their mutton; but the greatest lever to improvement was the formation of agricultural societies and the institution of fairs where live stock and domestic manufactures were shown and competed for preference and premiums. These societies brought together some of the best thought and experience of the country, and the fairs excited a healthy rivalry and advertised the stock of some enterprising breeder to his neighbors.

The South Carolina Agricultural Society, the first of its character in the United States, took a great interest in the breeding of sheep and raising fine wool, and was the first to offer a premium for the introduc-

tion of Merino sheep in 1785. It did not get the desired Merino, but it greatly encouraged the improvement of the native or old English sheep, which yielded a fine wool but not a heavy fleece. In June, 1807, a correspondent laid before the society six pieces of cloth manufactured in Rhode Island from South Carolina wool shorn from 65 sheep. The wool weighed 189¼ pounds, or an average of 3 pounds to a sheep, and was valued at 25 cents per pound when cleaned and prepared for weaving. The South Carolina wool was considered superior to English wool, and it was found so well adapted to mixing with cotton that renewed attention was called to the breeding of sheep, and on October 20, 1808, the governor advocated an extension of domestic manufactures, particularly for all articles of clothing, for which cotton and the rapidly increasing breeding of sheep gave them the material. In May preceding, Henry Izard, further to improve the fine-wooled sheep of the State, bought a Merino ram of Dr. James Mease, of Philadelphia.

In April, 1809, several prominent gentlemen of Philadelphia and vicinity, for the purpose of ascertaining what cattle of improved breeds were in the country and to give opportunity for the more easy diffusion of valuable stock, formed themselves into what they termed the "Pennsylvania Society for Improving the Breed of Cattle," and issued an address setting forth the objects for which they organized. They set out with the declaration that although the cattle of the Northern States in general were the best formed in the country, and with the advantage of good pasture made as good beef as any part of the world could boast of, yet it could not be denied that there was much room for improvement, which was not to be wondered at, when it was considered that in England, where the attention of numerous persons had been successively directed to the improvement of every species of domestic animals, it was acknowledged by the best authorities that even at that day good cattle were extremely scarce and commanded very high prices. The present was considered a favorable time for the commencement of a change in stock, and it was thought many circumstances combined to render the undertaking highly propitious. The attention of more persons of capital than formerly was then directed to the cultivation of the earth; the taste for education and the means of obtaining it were rapidly diffusing throughout the country; the spirit for settling our new lands was yearly increasing; population was augmenting to a degree unexampled, owing to the enjoyment of peace, the productiveness of labor, and the freedom and equality of our religious and political institutions, which invited the peaceful and oppressed from all nations to our shores.

There was, moreover, another advantage of infinite consequence, the experience of European improvers. Their plans of procedure were before the world; the errors they had committed had been pointed out, and comparison showed the superiority of the present improved stock over the former breeds abroad and in some respects over our own. It

was therefore easy to avoid the errors which others had acknowledged, and to pursue, without fear of failure, a line of conduct grounded upon principles which their experience as well as our own had shown to be correct.

It was assumed that the different dispositions and qualities of cattle were well known to all who had had any experience in the business of grazing. Some would come to maturity or fatten much sooner than others; in some the finer and more valuable parts were the heavier, while in others they were lighter and coarser. If, then, was considered the great difference in the profits to the breeder or grazier in rearing or feeding one or the other kind of animals, the importance of propagating that breed which possessed the more valuable qualities would be apparent. "Repeated observations," says the address, "have established the point that such qualities are generally connected with certain forms, and as the knowledge of those forms was hitherto only to be obtained by a course of experience, sometimes at much cost, or certainly at more cost than was desirable, the society are preparing a publication, which, among other papers, will contain the information requisite, and also directions and remarks tending materially to assist the endeavors of those who are disposed to commence the improvement of farm stock."

This society was successfully launched, and on June 9, 1809, offered premiums for superior cattle, hogs, and sheep. A premium of $50 was offered "to the person who shall introduce and keep for hire in the counties of Philadelphia or Delaware a full-bred ram of the New Leicester breed," and a premium of $100 "to the person who shall, by selection and admixture, originate a breed of sheep from our native stock which shall fatten most speedily and produce the most and finest wool." It was thought unnecessary to offer any premium for Merino sheep as "the public ought to be fully aware of the very great and growing importance of this invaluable breed."

At the first semi-annual shows of this society, held in July and October, 1809, some of Humphreys' Spanish Merino sheep were exhibited, and some Irish, Tunis or Barbary, New Leicester or Bakewell, and Southdown.

On November 1, 1809, Joseph Kent, Thomas Cramplin, Henry Maynadier, John Mason, and Tench Ringgold formed a society at Georgetown, D. C., for the purpose of encouraging home manufactures and the rearing of domestic animals by inviting exhibitions and distributing premiums. The first general meeting was held November 28, 1809, under the name of the "Columbian Society for the promotion of Domestic Economy," and the counties of Stafford, Prince William, Fairfax, and Loudoun in Virginia, the District of Columbia, and the adjoining counties in Maryland were well represented by their most substantial citizens. At an adjourned meeting, December 13, 1809, it was determined to give premiums for domestic manufactures and for improved live stock, of which there was to be given:

One hundred dollars for the best two-toothed ram lamb.

Eighty dollars for the next best two-toothed ram lamb.

Sixty dollars for the third best two-toothed ram lamb.

Best as to quantity of wool for the carcass.

The first exhibition of this society took place at Georgetown, May 16, 1810, and was largely attended by the planters of the adjacent country and the national officials, including the President of the United States and members of his cabinet. The sheep shown and the prizes awarded have been given on a preceding page.

The Berkshire (Mass.) County fair and cattle show was a typical New England institution. It was organized in 1809, and the meetings were held at Pittsfield. The exercises began by a procession to the church, where prayer was offered, hymns and patriotic odes sung, and appropriate addresses delivered. Then an adjournment was effected to the show grounds, where live stock and domestic manufactures were on exhibition. Sheep were favorite animals and attracted a good share of attention, for woolen mills had been established and the growth of fine wool was encouraged. Most of the sheep shown were Merinos or mixed bloods. At the first show, October, 1810, 283 sheep were exhibited by Elkanah Watson, David Humphreys, Mr. Colt, and others, most of them of Merino blood, and a few full-blooded Southdown and Amsterdam rams, and ewes, and two half-blood Irish ewes, the fleeces of which weighed 7 pounds 14 ounces and 7 pounds 8 ounces, respectively.

Some scattering notices gleaned from the papers of the day, serve as landmarks in the march of improvement. In 1809 Alexander Stuart, of Maryland, had five fleeces, which yielded him 43 pounds of wool. In 1807 Mr. Covenhoes, of Middletown, N. J., raised from 20 ewes 54 lambs, and in 1808, from the same number of ewes, 60 lambs. The ewes had lambs twice, and some of them twins at each time. In 1809 a sheep owned by Mr. Melvin, of Georgia, sheared 14 pounds of wool 16 inches long, and a traveler in the back parts of that State informed Dr. Mease that he found at the bottom of the Iron Mountain a district abounding with sheep, the fineness of whose wool excited his admiration. The people had everything they wished for. They bought nothing but salt. Their houses were filled with clothing from the fine wool mentioned, mixed with cotton, and all raised and woven by themselves. A traveler further south, in the Mobile district, says that in 1809 sheep were scarcely known. There were probably 100 head among the settlers in Washington County. The few, however, which were kept were healthy and thriving; but the wool was generally coarse, and had a tendency in many cases to be hairy. At the yearly sheep-shearing "at the clover field," near Trenton, N. J., one ram weighed on foot 173 pounds, and gave 8 pounds of wool. A ewe of 123 pounds gave 11 pounds of wool.

Early in 1809 a gentleman of Philadelphia, who did not wish to go beyond his own resources, yet anxious to bear a liberal portion of the expense, proposed to send two ships to Africa to import into the Southern States a number of camels, and among their qualities which he

thought would recommend them was their hair, which "being annually renewed will afford a material for manufactures highly desirable, and of more value than Merino wool," and the public liberality which had attended the attempt to introduce the Merino sheep, it was thought, would serve as an encouragement to those who desire to join in the enterprise.

MARENGO SHEEP.

In 1810, Jacob Gibson, of Easton, Md., advertised an improved breed of sheep known as the Marengo. He asked $30 per pair, and warranted they should weigh 270 to 300 pounds, and yield from 18 to 22 pounds of wool. By an article in the Eastern Star it appears that 101½ pounds of wool were sheared in May, 1810, from 12 ewes loaned by Mr. Gibson to Governor Lloyd, and that a ram lamb of the same breed sheared 11½ pounds. The ewes loaned to Mr. Lloyd (who had a Merino ram) were preferred on account of the quality, not the quantity, of their wool.

THE TUNIS OR BROAD-TAILED BARBARY SHEEP.

John Adams records in his diary, while at Paris in 1782, that "as Mr. Curson talked of going to Marseilles, Mr. Laurens advised him to send to America some Barbary sheep. He says he had one in Carolina, but never could make the American rams go to that sheep." If Mr. Curson acted upon Mr. Laurens's advice there is no record of the fact. In 1799, when Gen. William Eaton was United States consul at Tunis, at his request, and out of compliment to the United States, the Bey of Tunis permitted to be taken from his farm in the interior of the country a number of broad-tailed Barbary or Mountain Tunis sheep for shipment to the United States. Eight or ten were placed on board the man-of-war *Sophia*, Capt. Henry Geddes, on May 3, 1799, but only one pair survived the voyage to arrive in the Delaware River. These were placed by Timothy Pickering, Secretary of State, into the hands and keeping of Judge Richard Peters, of Belmont, near Philadelphia, who kept and bred from them and gave free use of the full-blood rams to those who chose to avail themselves of the privilege. His pastures were soon overburdened with ewes brought from far and near, and the improved breed was extensively propagated in Pennsylvania and the neighboring States, many pure bloods being sent as far south as South Carolina. Those who availed themselves of the benefit were not, as a general thing, sufficiently conscious of the value, save that they found the broad tail excited curiosity, and procured a ready sale for the lambs. The original ram, after Judge Peters had bred from him some excellent sheep, was sent to his friend, Gen. Hand, for the use of that gentleman and the farmers of Lancaster County. Several victualers of Philadelphia, discovering the superiority of the mutton over that of all other sheep, both in quality and price, made up a purse and offered any sum that Judge Peters would choose to fix for the ram, intending

Haines, Del.

TUNISIAN MOUNTAIN (FLAT-TAILED) SHEEP.

FROM MEMOIRS PA. AGR. SO., 1824.

to breed lambs for the market, but he did not think it consistent with his ideas of propriety to accept it; nor did he wish the lambs killed, and his object in increasing the numbers and spreading the breed thus defeated. He gave up the management of his farm to his neighbor and tenant, Thomas Bones, on shares, and with it the full-blooded sheep. Neither the tenant nor those succeeding him held the sheep in proper estimation, though every endeavor was made to impose it upon them; and, notwithstanding the great demand for the breed, the lambs were sold, year after year, to the butchers at the prices, or nearly so, given for those bred from common sheep. It was not until about 1809 or 1810 that Judge Peters's tenant discovered their value, by the greatly increasing demand for them, which was much greater than could be supplied. This demand was created by the experience of those who had been convinced, by their own observation, of their superior excellence. The flock was so reduced that, in a pecuniary point of view, this late conviction of the value of the breed was to Judge Peters of very little importance, but his tenant took pains to recover his lost time and opportunity. Others, however, had been more careful to preserve the highly valuable race. These facts were mentioned by Judge Peters in 1810 to account for these sheep not being very extensively known and estimated up to that time. His endeavors at getting the sheep into credit were for a long time very unpromising; he had insensibility as well as prejudice to combat; nor did they readily yield.

"Experience in the affairs of the world too often shows," remarked Judge Peters, "that whatever intrinsic merit a salable article may possess, the price in the market is the criterion by which its value is generally estimated," and it is not unlikely that his object of spreading this breed of sheep and inducing care and attention to them would have been (taking mankind as we find them) more effectually accomplished by demanding large sums for even the few he could have sold, or hired out as tups, at high prices. If any new proofs of this view of the subject were wanting the daily instances of purchases at prices novel and astonishing in the country made of the Spanish Merino would afford them. The zeal prevailing in the community for the breeding of this or any other estimable addition to our stock of domestic animals did not exist at the time the Tunis sheep made their first appearance, but in 1810 the prospect was flattering for all good breeds of sheep, and particularly for the Merino, which impressed all with the value of its wool.

In Spain, where the Merino was bred particularly for its wool, the Tunis or Barbary sheep supplied the tables of the wealthy with mutton. Our country is extensive enough for many different races, and some may thrive where others will not. Experience had shown that in the South, notably in South Carolina, the Tunis sheep descended from Judge Peters's stock was preferred to all others, and here and in North Carolina they were bred pure. For reasons connected with the im-

provement of our native or common sheep, and for the purpose of calling public attention to the Tunis mountain sheep, without interfering with the views of those who preferred others, Judge Peters, on May 8, 1810, read before the Philadelphia Society for Promoting Agriculture a paper setting forth the specific distinction of these sheep as compared with the broad-tailed African sheep in general, which were much inferior. Some of the latter had at various times between 1800 and 1810 come into the country; but all, as far as can be learned (except some Persian sheep), were of an unprofitable race. Judge Peters's experience and observation as to the Tunis mountain sheep were founded on a knowledge of them for a period of thirteen years. The benefits arising from their propagation had accrued in the greatest degree to others, for the advantages—except in the real pleasure and solid satisfaction derived from even partial success—had been small indeed. He claimed no merit over others, but considered a reasonable emolument the just reward for all those who risk or labor in laudable pursuits. He did not aim at establishing this breed of sheep on the depreciation of other good breeds, being only desirous that it should take its proper rank among them, not hesitating to avow his opinion that the Tunis sheep would in the long run compete with any in fleece and carcass together, from the same ground in equal times. The increased price of better wool in 1810, with all that was said of its presumed stability, did not shake his opinion. Plenty or scarcity of an article, and shifting demand for it, operated on prices.

As to the fleeces of the Tunis sheep, the fact was maintained that no better homemade cloth could be shown than that made from selected parts of it, and especially that afforded by the cut next the pelt. It was better than any obtained from the common sheep. Some of the fleeces would have three cuts, of about 1½ to 2 inches long each. Many of them were of this description, and more were short and fine, of which gloves and stockings were made equal to fleecy hosiery. Its advocates claimed that no wool produced superior fabrics for common use, for which the cut next the pelt was used. Some fleeces were furry next the pelt, like beaver, but consisting of very fine-fibered wool.

The mutton of the Tunis mountain sheep was the finest and best in the Philadelphia market, and the proportion of flesh to size of the animal was remarkably great. There was but little offal, the pure-bred sheep being hornless and its bones small. It laid its fat on profitable points, not only on the tail but generally distributed through the whole carcass. It did not show the suet on the kidneys as much as did some other sheep, but the fat was well mixed with the flesh, which was of the most inviting color, and marbled in a striking degree. The tallow hardened again after melting. Its tail, which at times weighed, prepared for cooking, from 6 to 8 pounds, when properly dressed was a feast for an epicure and rivalled only by the tail of a young beaver when free from the fishy or sedgy taint to which it is subject at cer-

tain seasons. Judge Peters gives the characteristics of these sheep as they came under his observation. They were better set with wool than any other with the exception of the Merino, and did not shed it like common sheep. The wool was sufficiently fine for all common purposes and could be applied without mixture with other wool to more use: than that of the Merino or the common sheep. The average weight of the fleeces was from 5 to 5½ pounds washed wool, washed before shearing; some flocks well cared for averaged 6 pounds, and individual sheep of pure blood gave 8, 9, and 10 pounds. The wool was fine and from it Judge Peters made white homemade blankets and flannel of great excellence.

These sheep were hardy, bearing heat or cold better than the common sheep, fattened with less food and much quicker, and would bear to be kept fat without being diseased far beyond any other. The carcass was heavy, but not coarse. The heaviest ewe coming under his observation weighed 182 pounds alive, when sheared. Her fleece, clean washed, weighed 8½ pounds. She was half-blood. A half-blood ram, a twin, at 18 months old, weighed 214 pounds. The Tunis ewes were the smallest, and generally carried the finest fleeces. They were gentle and quiet and kept in good condition upon coarse food, and were healthy, a diseased one being very rare. It was, like the Merino, a peculiar genus and race of sheep. Those who valued them reconciled themselves to colored wool, though the greatest proportion was white. The lambs were white, red, tawny, bluish, and black, but the fewest of the latter. All (except the black) grew white in the general color of the fleece, though most commonly colored in spots, and either tawny or black generally marked the cheeks and shanks, and sometimes the whole head and face. By attentive selection and proper management these sheep could be raised as white as any other, but in most cases there remained in spots a cast or trace, a tawny tinge. The butchers of Philadelphia testified that while they had killed many sheep of all kinds, the broad-tailed Tunis was the best, compared with the general run of that animal in the Philadelphia market. They fattened in the flesh and on the ribs far superior to most others. The rough fat was as great in quantity as in any common sheep, and very white. The lambs sold the highest of any in the market and were more sought after. An unsound sheep was unknown. A ram lamb 1 year old, a half-blood, gave 23 pounds to the quarter well furnished with rough fat. A three-quarter blood ewe gave 20 pounds to the quarter, and a spring lamb 14½ pounds. Maj. Reybold, of Delaware County, bought a three-quarter blood ram of this breed weighing 214 pounds. The wool of the full or high blood, or when crossed with good fleeced sheep, was in great estimation, and yielded more to the fleece, the flock through, than any other breed known. P. Reybold had killed upward of 2,000 Tunis sheep, and also killed Bakewell's New Leicester and Wall's breed and the St. John's, and in fact all the various kinds of sheep, but

the Tunis was the best of all for meat and sold more readily than any other. Another butcher confirms all these statements, "save that I have known some sheep, especially some of the Leicester breed from New Jersey, lay on fat as well;" but the lambs were always fine, and the meat the best color of any mutton he ever knew.

Full twenty years after these statements were made, Philadelphia butchers still testified to the great value of this blood by the assertion that their market was never so well supplied with early fat lambs as after the introduction and spread of that breed by Judge Peters.

When Judge Peters sent the ram to his friend Gen. Hand, at Lancaster, the Germans there would not, at first, permit any connection with their ewes. Gen. Hand was obliged to buy 30 or 40 to set an example. The Germans considered it as an unnatural connection, but when the Philadelphia butchers sought for the lambs, and good prices were given for them and the wool, they changed their opinion and put money in the purse by raising them.

The original ram and ewe—Caramelli and Selima—were both killed by dogs, the ewe giving a lamb at 16. "They will, perhaps," says Judge Peters, "become memorable as the first emigrants to our country from this branch of the extensive family of the *Laticundæ*."

Some data concerning the crosses of the Tunis sheep are preserved. In the spring of 1809 Dr. Kent, of Prince George County, Md., sheared 11 pounds of fine wool from a yearling—a cross with a common sheep and a half-blood Tunis ram. On October 30, 1810, John Tayloe, of Mount Airy, Richmond, Va., offered for sale "a beautiful flock" of ram lambs from the Barbary he had mixed with the finest Virginia ewes.

In the spring of 1825 a wether 4 years old, mixed Leicester and Tunis blood, was sold in the market at Trenton, N. J., for $90, and when retailed brought the butcher $122.40. The total weight of the quarters was 148 pounds. The saddle weighed 83 pounds, and was sold for $83; the skin and fleece 19½ pounds, $20, and the other parts $19.40. The rough tallow weighed 26 pounds.

At the time Judge Peters called public attention to his Tunis sheep the Merino craze was upon the country and absorbed nearly all the interest of the farmers and speculators. In addition, the usual short-sighted practice among farmers of selling to the butchers or in the markets the best lambs and sheep and keeping only the most unsalable, deteriorated the breed most lamentably, and those who had charge of Judge Peters's flock had their share in this culpability. Several butchers posted breeders from his stock in New Jersey and Delaware. The progeny were slaughtered in the markets. This naturally diminished the multiplication of the breed, yet the number produced from the original pair was surprising, even under circumstances not always encouraging, and the blood was extensively diffused. But for the introduction of the fine-wooled Merino, these Tunisian sheep would probably have been disseminated throughout the United States, and in

some of them have become the prevailing flocks. They were bred pure in Pennsylvania, North and South Carolina, and about 1820 there was a sharp revival of the demand for them. Judge Peters's flock had somewhat deteriorated, but at the Pennsylvania cattle show, June 4 and 5, 1822, John Hare Powell exhibited 21 sheep of this blood which retained a large portion of the excellence of the original importation of Col. Pickering. Mr. Powell stated that they arrived early at maturity, carried good fleeces, afforded delicate mutton, laid their fat well within, and, except the Southdown and the Leicester, were more easily kept than any sheep he could find. The great objection to them was the obstruction opposed to procreation by the unwieldly excrescence adhering to their tails. If an ewe lost her lamb early in the season the chance of impregnation was very small. Various expedients had been resorted to in vain to remove the difficulty, which, when the animal was fat and thoroughbred, it was impossible to obviate, even by the assistance of the shepherd's hand. Mr. Powell had, he believed, the remnant of the best flock which could at any time have been found in Pennsylvania. He had crossed them with Beane's mixed Leicester and Southdown stock, and hoped to obtain the hardiness and fine mutton of the Tunisian with the better form, smaller bone, wider chest, longer fleece, early maturity, and singular tendency towards fat of some of the best individuals of the other family, without the useless incumbrance of the heavy and broad tail, for it was absurd to propagate a race of animals carrying a fifth quarter in the tail, which, however delicate to the palate of a Turk, was not likely to become fashionable in America.

The Tunis sheep now had the New Leicester and Southdown to contend with, and made but little headway, though its advocates claimed it as the "farmer's sheep" and the most profitable of all breeds, giving a fleece far superior to that of common sheep and a carcass far better than that of any other. As the Leicester sheep increased in number and decreased in price, the Tunis sheep and its crosses gradually disappeared. It left its traces in Pennsylvania, however, as late as 1852, where it was still a hardy race, and the first crosses with the common sheep were thought to be particularly valuable as early lambs for market.

In 1807 or 1808, Commodore Barron, of the U. S. Navy, brought some Tunis sheep into Virginia and the District of Columbia, but they were inferior to those bred by Judge Peters, and the effort to perpetuate the pure blood was a total failure, the physical impediment, the broad tail of the ewe, forbidding it. This was the case, also, in later importations, as in 1823, John S. Skinner, editor of the American Farmer, at Baltimore, who had a pair presented him, expressed his disappointment in them, both as to their capacity to procreate and the quality of the wool, which gave Judge Peters the impression that they were not the true Tunis mountain sheep, for from these he had experienced no trouble in their procreation, and as to the wool, his own Tunis sheep bore fleeces

not only far more abundant, but incomparably more valuable than those of the best common sheep.

Ex-President Jefferson had a Tunis ram and ewe brought direct on a Government vessel, and his experience was similar to that of others who failed to perpetuate the pure blood. He describes them as of low stature, round bodies, full fleeces, of good quality, hardy, thrifty, always fat, and of high-flavored flesh. But the ewe would never breed, her massive tail never admitting the commerce of the ram. He bred from the ram, in-and-in, for more than ten years with a different race, and found that when a ewe got to be about seven-eighths pure blood the same obstacle became so enlarged as to prevent further procreation. He continued this breed for the use of the table, and because the wool was as good as that of the ordinary sheep.

It may here be stated that at the time Jefferson possessed the Tunis sheep he had also had under his observation the broad-tailed sheep from the Cape of Good Hope, with broad tails turned up like that of a nicked horse, long legs, light bodies, and slight fleeces; and those from Algiers, of somewhat less stature and better form and size.

In August, 1822, Hon. Dudley L. Pickman, of Salem, presented a ram lamb of the long-wooled, broad-tailed sheep of Africa to the Massachusetts Agricultural Society, but we have no further record of it.

In September, 1825, 13 broad-tailed or Tunisian sheep were landed at New York. They were procured from the interior of Africa by Capt. Creighton, of the U. S. S. *Cyane*, at considerable expense and with no small trouble, and sent out for the purpose of introducing here a species said to be highly valuable, not only for the wool but the flesh. The tail was described as having a very singular appearance, being in some instances from 8 to 10 inches in breadth, forming when cooked a most delicate and delicious food. A pair of these was sent to Gen. Van Rensselaer, of Albany.

In 1835, at Brookland Wood farm, 9 miles from Baltimore, there was a small flock, a cross between the Leicester sheep and a Barbary ram, imported by Commodore Rodgers, from which Mr. Caton bred. The old ram was dead, but his brown-legged and brown-faced sons and daughters remained; "they are hardy and thrifty animals, bear a fruitful fleece, and yield for the shambles a carcass at once sweet, juicy, and savory."*

The Tunis sheep, and other varieties of the African broad-tailed, have from time to time been imported into America, but owing to difficulties elsewhere stated have made but little permanent impression upon our flocks. About the beginning of the year 1841 the Boston Society of Natural History received from D. S. McCauley, United States consul at Tripoli, two rare varieties of African sheep. Three of these animals, a ram, a ewe, and a lamb, were covered with a close, thick wool, and were fine specimens of the four-horned variety from Benzari, in the

*Farmer and Gardener, Baltimore, September 29, 1835.

Tripoli agency. They were also distinguished by the great length of their tail, which attained 15 pounds, resembling marrow in its substance and was esteemed by epicures. The fourth specimen was a Fezzan ram, clothed with hair, which formed a mane upon the neck and shoulders and attained several inches on the dewlap. In the nature of the hair this animal approaches the goat, as well as in the long and slender legs, while the projecting nose and recurved horns eminently distinguishes the variety.*

For many years a variety of these broad-tailed African sheep was cultivated in South Carolina and Georgia, in the first-named State by Col. Richard Singleton and in the last-named by Richard Peters. James W. Watts, of Cartersville, Ga., in a communication to the American Farmer, under date of October 14, 1858, said that he then had a flock of very rare breed, known as the African broad-tailed, which he obtained from a flock in South Carolina, the only one he knew of in the United States, formerly owned by Col. Singleton, and bred from several importations made by him from the coast of Africa by crossing on the common sheep. They were remarkably hardy and appeared to be exempt from the snuffles, and while other sheep were driven to the shade by the heat of the sun they grazed with impunity and did not suffer. When pure bred and kept very fat (as they were apt to be if they had half a chance), the great weight of their tails offered a barrier to the buck, but this was obviated by a little management. Mr. Watts regarded them as an excellent cross on common sheep for all purposes. They yielded a good fleece of coarse wool, which they held well till shearing time, which many other breeds did not. Mr. Watts afterwards removed to South Carolina, and in a letter from Laurens County, in that State, under date of December 22, 1877, said that he was still breeding the African broad-tailed, and that if the principal object in raising sheep was mutton for the market he would certainly recommend them, because they mature earlier; and were the question one of long combing wool for his locality he would cross the Cotswold ewe with the broad-tailed ram "for all the range of the country here this side of the Blue Ridge." On the rich bottom lands of the coast he suggested the cross with the Cotswold, which would give a variety that would thrive in any climate South.

The Tunis sheep is but one of the several subordinate varieties which may be referred to the Barbary race or Guinea sheep, and of which specimens have been brought into this country, among which may be mentioned such as the Morocco breed with long wool, the hair on the neck short, undulating, and of a rufous-brown color; the ears small and horizontal; the horns small, turning spirally outwards, the scrotum forming two separate sacs, and the general color white marked with liver-colored brown. This is the first African sheep that approaches the expectations naturally raised respecting those fine rams which were crossed with the Spanish ewes centuries ago, giving a breed that re-

* American Farmer, February 17, 1841.

sembles the sire in increased size and beauty of form and the dam in the softness of the wool, a proof not to be disputed of the value of the Barbary sheep at that time. The whole of the northern coast of Africa presents scarcely a native African sheep that deserves cultivation, with the exception of the Morocco breed. From time to time specimens have been imported, but more as curiosities than as additions valuable to our sheep and wool industry.

Some Syrian broad-tailed sheep were brought into the United States in 1809, and again in 1810, but they have left no record. Others were brought in later, and, in 1840, Thomas B. Jacobs, of Lancaster County, Pa., reported that he had been very successful in raising full-blooded and half-blooded Syrian sheep from the stock imported by Commodore Elliott in 1838, and he thus describes them:

> The sheep are of the description called broad-tails, from the extraordinary size of the tail. It is highly prized for mutton. It had also a fine fleece of remarkably long wool, which is very superior for many manufacturing purposes. A pair of these sheep yielded 9 pounds of wool last summer (1839) of fine staple.

On August 29, 1811, George Ferris & Co., of New York, offered at public sale a full-blooded Woodland or Egyptian ram, one year old, a breed, said the advertisement, "which bids fair to excel in value all the Merino rams ever imported." It was of larger size, produced more wool, and the meat was better than the Merino. The tail of this ram was said to be 12 inches in breadth, and would weigh 40 to 50 pounds.

Of far more importance were some straggling introductions of English, Irish, and continental breeds. Great Britain had stringent laws against the exportation of sheep from her ports, despite which an occasional one found its way into the United States.

IRISH SHEEP.

The large long-wooled sheep of Ireland found its way across the Atlantic towards the close of the last century; first made its appearance in Virginia, where it was known as early as 1789, and then showed itself in various parts of the Middle States and New England. In Virginia it wasbut partially extended, but where known much esteemed for its size. A ram of this breed only 2 years old was sheared by Capt. Amos Rainger, of Barre, Worcester County, Mass., in 1802, which produced 11¾ pounds of the finest wool. His sire was brought from Ireland by Capt. Rainger. This phenomenal fleece, for that time, was considered as a great improvement, and the particular attention of the farmers of the country was called to this invaluable sheep.

In July, 1809, two rams and two ewes of this Irish breed were exhibited at the first show of the Pennsylvania Society for the Improvement of Breeds of Cattle, held at Philadelphia. One of the rams was 6 years old, and of great size. He was the sire of a wether fattened and killed early that spring, whose live weight was 276 pounds. One of the two rams was sold to a Mr. Sloane, of New Jersey, for $45, and a

HAINES, DEL.

WICKLOW MOUNTAIN SHEEP.

FROM "DOMESTIC ANIMALS OF GREAT BRITAIN."

ewe was sold for $25. A lamb of this breed, raised near Philadelphia, when 4 months old weighed 94 pounds.

Among the sheep shown at the Pittsfield fair, Massachusetts, June 6, 1810, by Samuel H. Wheeler, of Lanesboro, were two half-blood Merino and Irish ewes, whose fleeces weighed 7 pounds 14 ounces and 7 pounds 8 ounces.

While these sheep were few in numbers in Virginia, and none further south, and of comparative rarity in New England and New York, they were known in New Jersey and Pennsylvania, particularly in the vicinity of Philadelphia, and principally in Gloucester County, of the former, and at Westchester, in the latter State. Among the breeders at Westchester were C. & E. Jeffries, who imported an Irish ram about 1807. In March, 1812, Francis Hitchman killed seven of these sheep that he had raised from Jeffries' ram and the common sheep of the country. The weights of these sheep are given:

	Skin.	Fat.	Meat.	Total.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*
One	15	26½	115	156½
Two	20	25	149	194
Three	16½	24½	133	173
Four	15½	34½	139	189½
Five	19	22	105	146
Six	15½	21½	120	157
Seven	16	27	115	158

In October, 1812, seven Irish sheep were killed in Gloucester County, whose aggregate weight was 1,297 pounds, or an average of 186 pounds 11 ounces, one of the seven weighing 201 pounds. That weight was exceeded in November, 1812, when three were sold in the Philadelphia market weighing, respectively, 197, 200½, and 205 pounds live weight.

NEW LEICESTER SHEEP.

The old Leicester sheep were known in Virginia at an early day, if they did not, indeed, form the foundation of most of her flocks. Previous to the war of the Revolution some individuals of the Bakewell improved or New Leicester sheep were brought into the colonies, principally into New Jersey and Virginia, but they had no general effect upon the sheep husbandry of that day, and at the close of the war the blood had run out. The stringent English laws against the exportation of sheep from the British Isles prevented the American agriculturist from participating in the great improvement made in the English sheep from 1750 to 1810, yet, under some difficulties and at much risk, these laws were broken and evaded, and cunning or enterprising sea captains and others smuggled sheep out of British ports and landed them in America. Washington, as it appears, had some descendants of the smuggled stock, particularly, as he says, of the Bakewell (Leicester) breed. The New Leicester was also sparingly known in the vicinity of Philadel-

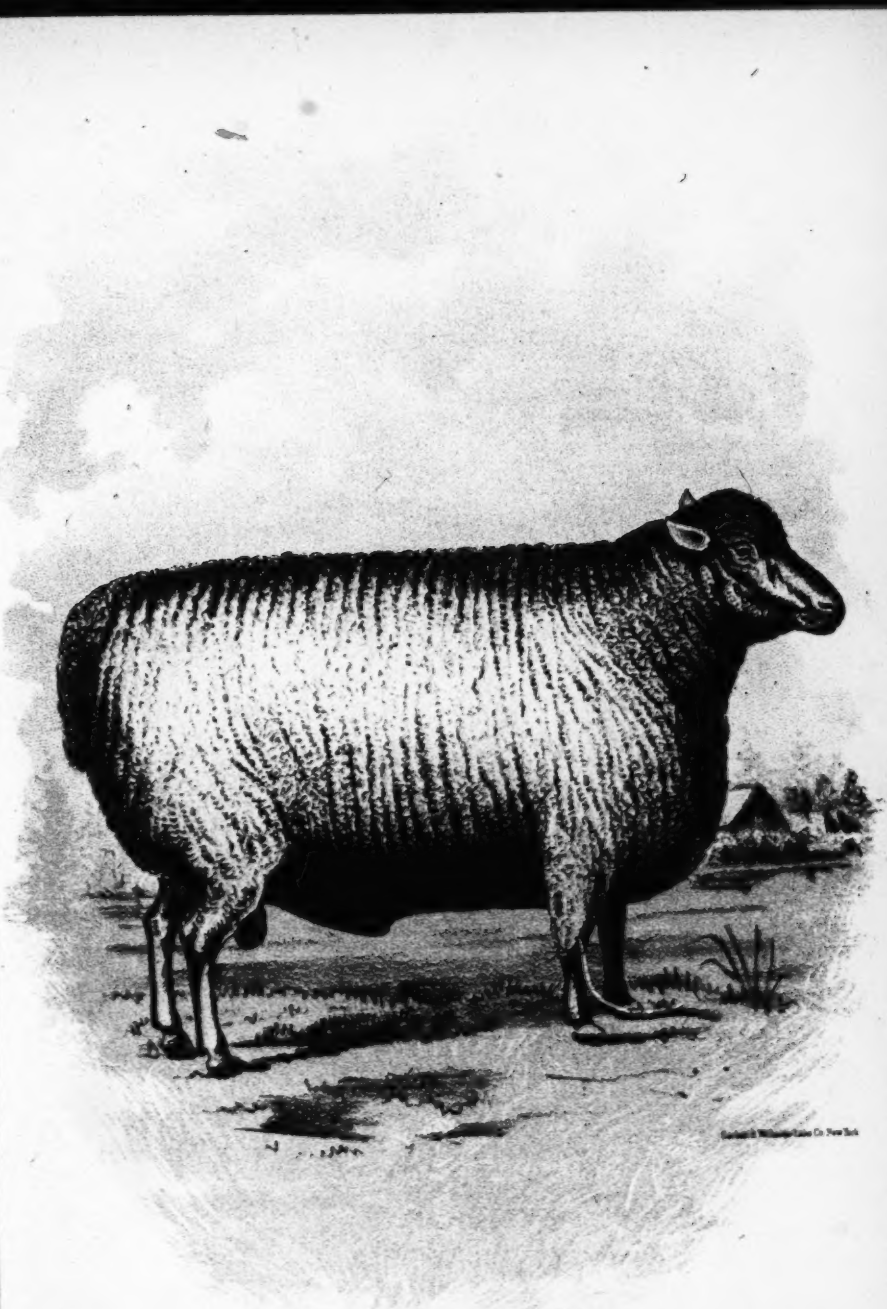
phia as early as 1800; but it does not appear that at that time they were bred pure anywhere within the limits of the United States. A ram or two would be introduced into a flock and half-bloods produced, which would show great improvement; but nowhere was there a pure full-blood New Leicester flock. The only known flock in America was owned by Rev. Mr. Toofy, an enterprising clerical farmer from England, who brought a few choice Bakewell sheep, rams and ewes, to Quebec about 1799 or 1800. A gentleman of Maryland was offered the privilege of some from the same flock, but declined to avail himself of it on the ground that it would entail too much trouble.

In 1806 John Hart, of Cheshire, Mass., succeeded in getting from England a ram of the New Leicester breed, and in the autumn of 1807 offered half-blood rams of his get at $30 per head. Some half-bloods are noted at about the same time at Philadelphia and also in Virginia.

About 1805 or 1806 Capt. Beanes, of New Jersey, succeeded in shipping some rams and ewes from England, full-blooded New Leicesters. He disposed of them to Capt. George Farmer, a retired sea captain and shipowner, then living on a fine farm on the banks of the Raritan River, opposite New Brunswick, N. J. The worthy sea captain was an intelligent and progressive agriculturist and a careful breeder, maintaining a pure flock which became widely known and fully appreciated. Miles Smith owned a farm adjoining Capt. Farmer's, and purchased from him some of the new sheep.

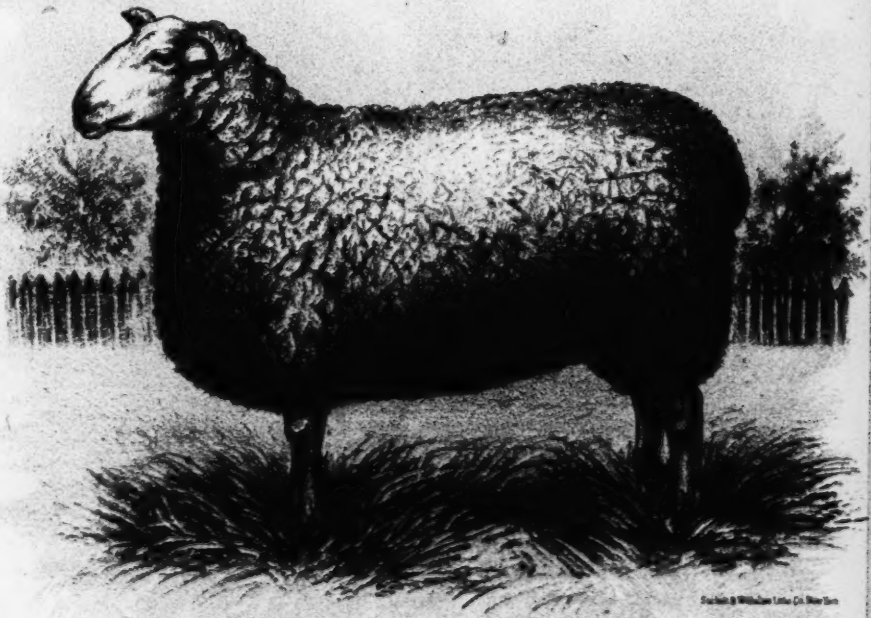
Capt. Farmer sold his rams at $1,000 each, and made some few sales at these figures, but his usual mode was to let them, which he did readily at from $150 to $200 the season. By the sale of a few rams and ewes and the letting of others the New Leicester or "Farmer's sheep," as it became known, was distributed throughout New Jersey and partially through Pennsylvania. In December, 1808, one of the rams hired at $200 for the season by a farmer near Newton, was killed by dogs. He weighed 250 pounds, and his fleece 10 pounds. A ewe of Miles Smith's flock was shorn at the fair of the Pennsylvania Cattle Society in the summer of 1809, by James Mease, and attracted much attention by its exhibition of the points of the New Leicester—small head, small bone, and plump body. Crosses on the native sheep or on those imported from continental Europe were frequent. In May, 1809, R. Smith, of Freehold, N. J, sheared from 11 yearling ewes, a cross between Farmer's Leicester and native ewes, 81¼ pounds of washed wool, and in the same month the produce of Helder ewes and a full blood Farmer's Leicester ram made this showing: One ram gave a fleece of 8½ pounds, and weighed on the hoof after shearing 163 pounds. A ewe weighed on the hoof 128 pounds and gave a fleece of 10¼ pounds. Sir John, a yearling ram, clean washed and dry, weighed on foot 175¾ pounds, and his fleece weighed 11 pounds. It may be noted that these sheep were brook-washed and then dried just before shearing.

A successful breeder of sheep was Joseph Cooper, of Flemington,



AFTER YOUATT.

THE NEW LEICESTER SHEEP.



HAINES, DEL.

LEICESTER EWE.

(ENGLISH ENGRAVING.)

FROM "HORSES, CATTLE, SHEEP AND SWINE."—CURTIS, 1868.

N. J. He bred from Leicester rams hired of Capt. Farmer at $200 the season for three years preceding 1809. When he died, and his flock was sold at auction in October of that year, many persons attended the sale from Pennsylvania, Delaware, and New Jersey. Ninety-eight sheep, crosses between Leicester rams and native ewes, were sold for $927.05, the highest-priced ewe going for $20.30.

A ram and some ewes were shown at the Pennsylvania Cattle Show in April, 1810, and in June the same year B. B. Cooper, of Gloucester County, New Jersey, showed a yearling ram, a cross between one of Farmer's rams and a Helder ewe, which weighed 144 pounds—carcass 135 pounds, 5 ounces; fleece 8 pounds, 11 ounces. In December, 1810, there was a public sale at Bushkill, near Philadelphia, of 80 sheep, full blood, seven-eighths, three-fourths, one-half blood Merino rams and ewes, and several ewes of the Bakewell or Dishley breed, and a very fine seven-eighths Bakewell ram.

The New Leicester lost none of its good qualities in the hands of Capt. Farmer, and those who purchased from him or used his rams saw in the descendants sheep that fattened with great ease and produced wool much esteemed for combing and the manufacture of worsted, while the American or native breed were difficult to fatten and produced a wool greatly inferior, not only as to quality, but in quantity. Lambs at three months old sold for $4 to $5, while those of native breed rarely commanded half that sum, more commonly about a third.

The increasing interest in sheep, both as mutton and wool producers, caused a greater attention to their care and in the selection of animals to breed from, and as Capt. Farmer had the only pure flock of Leicesters in the United States the demand upon him from the neighboring States, and from the progressive agriculturists of his own State, was very large. For some years his farm was the center from which these improved sheep found their way into many parts of the United States, and tradition reaches us that in every respect they equaled their English ancestors in all their good qualities. Tradition also informs us that both Capt. Farmer and his neighbor, Miles Smith, were large purchasers of the Merino, and that at the time of the former's death, in 1818, both the Merino and the Leicester, as a full-blood sheep, ceased to graze upon their farms. How far tradition is to be relied upon we can not say, but as to Mr. Smith we do know that, in April, 1811, he imported seventy Merino sheep from Lisbon, which were taken to his farm on the Raritan.

TEXEL SHEEP.

North of the Cape of Good Hope, in the rich and sickly countries of the negroes of the western coast of Africa, the sheep are in great numbers, and of character as distinct from those of Asia and Europe as other quadrupeds of the same countries. There are two very marked varieties. One is of small size, not more than half the size of the or-

dinary sheep, and covered with short hair like a goat, without any wool, and with tails like swine; with a sort of mane like a lion on the neck, and so on the rump, and a bunch at the end of the tail. Some of them have singular enlargements on the cheek, throat, and sometimes on the forehead. They were familiar to the slave-traders, who carried them away as sea-stock along with their human victims, and many of them found their way into the West India Islands. Their flesh was not very palatable, but it was infinitely better than nothing. This was the case in their native home, but transportation improved them, and those of Curaçao were so highly esteemed that they were imported into the States of Virginia, South Carolina, and Georgia, to the great improvement of the mutton. They were very prevalent in Virginia during the latter half of the last century, and Washington had some in his flock at Mount Vernon.

But the most numerous breed of Guinea sheep is of a far different character. The male is horned, the horns generally forming a semicircle, with the points forward; the females are hornless. In the early part of the seventeenth century the Guinea sheep were taken into the islands on the Danish coast and into Friesland and crossed with the native sheep, producing the Mouton Flandrin or Texel sheep, of great size, beauty of form, and abundant produce of fine wool. They were very prolific and gave good milk. In their native country these sheep had a long, gaunt form, but under better treatment they became a large, well-shaped animal, indicative of the rich pastures and moist climate in which they had been fed in the drained lakes of Holland. Dutch traders brought these sheep to the American colonies before the Revolution, and many were imported into New York and Philadelphia from 1807 to 1820, and were very popular as a mutton sheep in the city markets. The cross on the Texel sheep with a dash of the Tunis broad-tailed was considered very superior.

In Holland they were crossed with some of the larger native breeds; the English long-wooled sheep, and—

particularly the Romney, contributed more to their amelioration, and they are now a singular, but in many respects a valuable, breed. They have somewhat decreased in size; they are seldom more than 2 feet 6 inches in height; they are polled, with long pendant ears; the leg is rather inclined to be long; the tail is short and large, and covered with wool; the fleece averages from 10 to 12 inches in length, but it is far from being fine, and is devoted to the preparation of coarser goods.

FRIESLAND SHEEP.

Similar to the Texel sheep, but of a superior size, is another Holland sheep, descended from a cross of the Guinea sheep with that of East Friesland, whence its name. It has a greater mixture of the English blood, stands 2 or 3 inches higher than the Texel, is without horns, and has a long, small tail, generally devoid of wool. The sheep of this breed are not inclined to fatten, are very prolific, and give a rich milk, much used by the Dutch and Flemings in the manufacture of a good

quality of cheese. As to the wool and the general character of this sheep we quote from a work published in 1763, and given as a note by Youatt:

It unites in itself the perfections belonging to every other breed without their defects; its walk is firm; its deportment noble; its form well proportioned in all its parts, announcing a good constitution and a healthy temperament, and exempt from the maladies so common to other breeds. The length of its wool is in proportion to its height, and it does not disfigure the animal as in the English sheep, whose fleece is a burdensome weight, especially at the return of spring. The Flemish sheep carries nothing about him that in the least detracts from his beauty. His wool is white and without spot—it is of a dazzling whiteness; he is contented everywhere—everywhere he becomes a citizen of the place he inhabits.

Youatt could not permit such praise for anything not English, and thus comments on the Fleming's words:

It is a good kind of sheep enough, but it owes much of its value to English blood; and, after all, the Belgians and the Dutch are compelled to import annually 3,500,000 pounds of British wool, in order to make that of this unrivaled sheep available for the manufacture of the finest stuffs. The average price of this kind of sheep in store condition was about 18 livres at that time, and 30 livres when fat, and the carcass weighed from 90 to 130 pounds.

The Friesland sheep were known in the United States before the present century, and many of them were introduced early in the present century and crossed on our common sheep, were very popular, and carried off many prizes at fairs and shows in Pennsylvania, Maryland, and Virginia. Some of these have been noted. From its long, slim tail, generally devoid of wool, it was frequently called the rat-tailed sheep. The wool of the Friesland sheep, as it appeared in the United States, was 14 to 16 inches long, and silky, very fine for its length, and some instances are recorded where a sheep gave 16 pounds to the fleece. They grew to a great size. The ewes, which were milked twice a day, gave a quart each time, and they brought forth every year from two to four lambs. This breed was confined to a limited area, but continued for many years. In June, 1825, a Mr. Smith showed at the Maryland fair twenty-three fleeces of Friesland sheep, weighing 204½ pounds, or an average of 8 pounds 14 ounces each. The wool was of excellent quality.

THE TEESWATER SHEEP.

Upon the rich lowlands bordering the river Tees in the east of England there was originally bred a tall, clumsy sheep, without horns, and with white face and legs. Their bones were small compared with those of other large breeds, but supported a thicker, firmer, and heavier body than its size would indicate; wide upon the back, somewhat round in the barrel, and yielding a heavier carcass than any other sheep, but proportionally longer in growing to perfection; the meat, however, finer grained than could be expected from such an animal. The wool of the old Teeswater was remarkably long, rough, and heavy, yet so loosely was it set upon the skin that the fleece seldom weighed more than 9

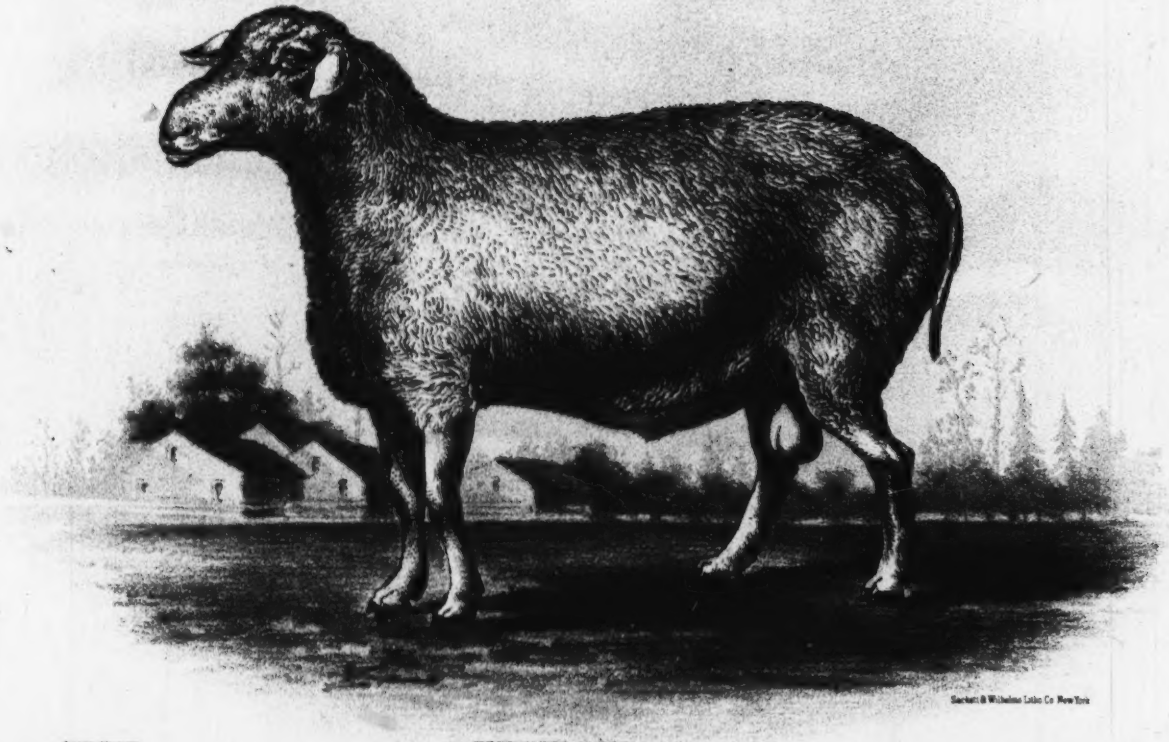
pounds. The ewes were very prolific, commonly bearing twins, sometimes three at a birth, and cases are recorded where a single animal brought forth 16 lambs in four years. These sheep prospered most in small flocks, in pastures with cattle. They were bred to some extent about 1808 to 1815, in Burlington County, New Jersey, and in the vicinity of Philadelphia, and attained a high degree of excellence and popularity, and traces of them lingered for many years afterward, until the New Leicester and the Southdown completely superseded and supplanted them.

THE SOUTHDOWN.

About the close of the past century an advertisement appeared in a Philadelphia paper announcing the arrival of some Southdown sheep. The owner stated that they were animals of the pure breed, but he could not tell how he got them, from whose flock in the old country they came, who brought them, nor in what ship they came, as it would subject the vessel to confiscation and the parties involved to fines and imprisonment. These were probably the first pure-bred Southdowns introduced into the United States.

In 1803 Dr. Rose commenced a system of wool-growing with a small flock of Southdown sheep. These were introduced by him and established on his large estate in the town of Fayette, Seneca County, New York. They did remarkably well, and the blood was diffused throughout the county and that portion of the State. In 1813 Dr. Rose crossed his Southdown flock with the Spanish Merino, and again about 1826 by the Saxony Merino.

Other breeds of sheep, such as the Lincolnshire, the Devonshire, and the Wiltshire, come across our inquiries between 1800 and 1810, but in such an indistinct manner that they can not be definitely traced. The Lincolnshire was similar to the Teeswater; were a large-carcassed sheep and carried more wool than any others. They had no horns, had white faces, long, thin, and weak carcass, the ewes weighing from 14 to 20 pounds the quarter; the three-year-old wethers from 20 to 30 pounds. They had thick, rough, white legs, large bones, thick pelts and long wool, from 10 to 18 inches, and weighing from 8 to 14 pounds per fleece and covering a slow-feeding, coarse-grained carcass of mutton. Some of these unshapely, ill-favored animals had been imported before 1796, but being ill-adapted to New England pasturage they did not thrive and were generally abandoned. The Devonshire sheep, noticed as occurring in Massachusetts about 1800 to 1810, it would be difficult to define. There were many varieties known to Devonshire at that time, most of them going through radical changes, in a transition state, in fact. They were mostly in great affinity with the old Dorset sheep, and had white faces and legs, generally horned, but some without horns. They were small in the head and neck, and small in the bone everywhere, the carcass narrow and flat-sided, and they weighed when fat from 9 to 12 pounds



Sackett & Wilhelms Litho Co New York

AFTER YOUATT.

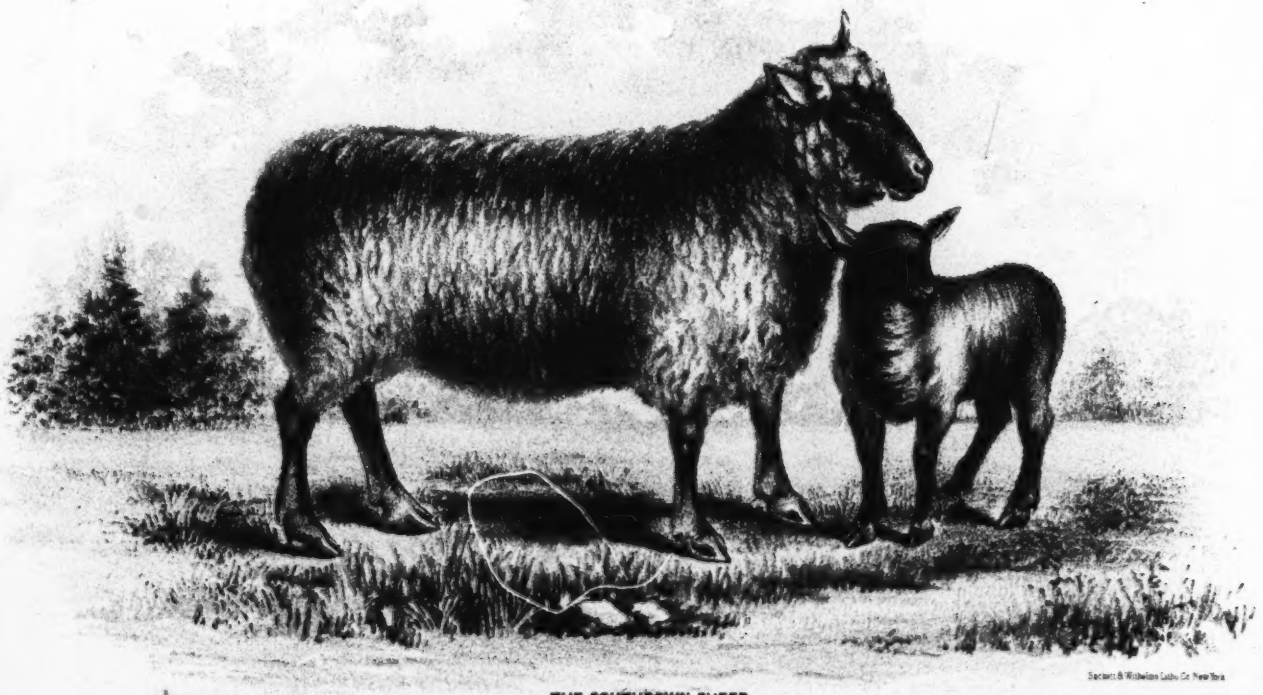
TEESWATER SHEEP.

Sackett & Wilhelms Litho Co New York

HAINES, DEL.

SOUTH DOWN RAM.

FROM "DOMESTIC ANIMALS OF GREAT BRITAIN."—LOW.

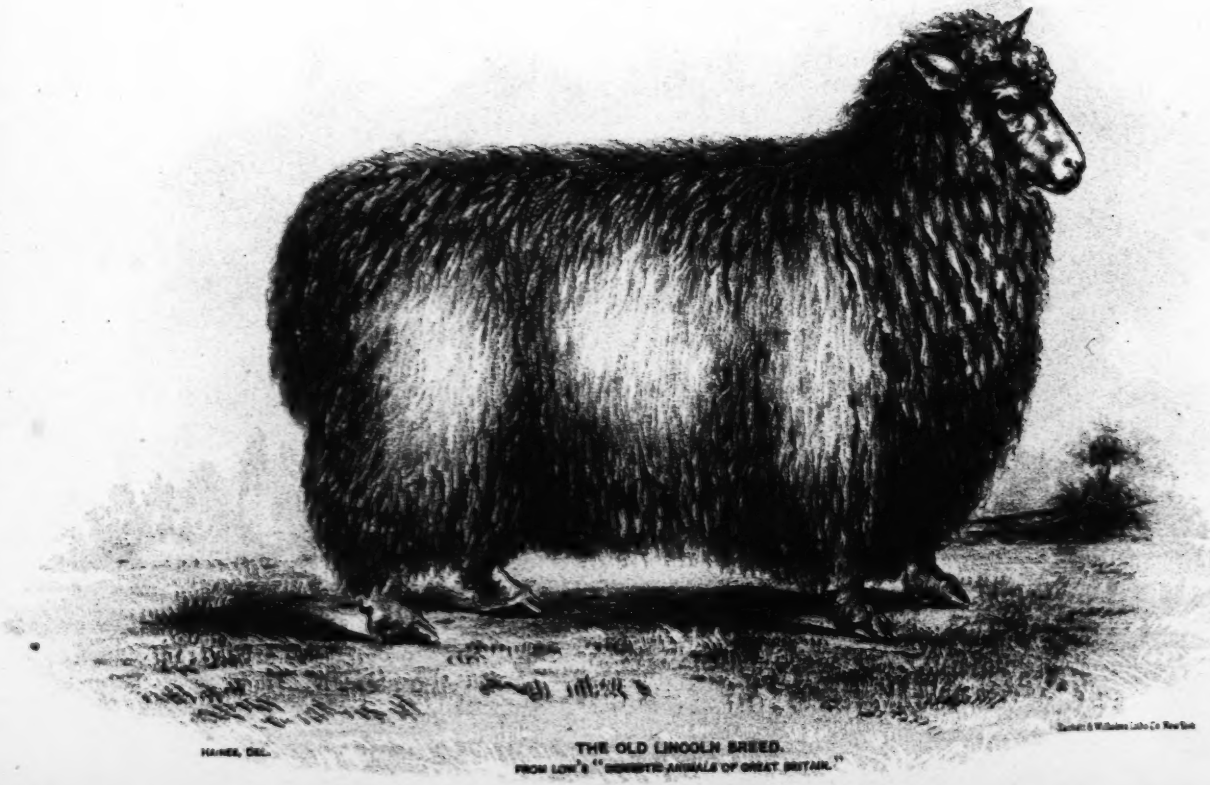


HAINES, DEL.

Sarony & Wilhelms Lith. Co. New York

THE SOUTHDOWN SHEEP.

FROM "LOW'S DOMESTIC ANIMALS OF GREAT BRITAIN."



HAINES, DEL.

THE OLD LINCOLN BREED.

FROM LOW'S "DOMESTIC ANIMALS OF GREAT BRITAIN."

per quarter. The fleece weighed 3 or 4 pounds in the yolk and the wool was short, but with a coarse and hairy tup. They were very hardy and their mutton was delicate. The Dartmoor and the Exmoor were the two leading varieties, and from them it is probable Massachusetts derived the few Devonshire sheep that crossed some of her flocks.

Some sheep bred on the islands along the New England coast were of a peculiar kind, though descended from the common sheep of the mainland. Among these may be mentioned the variety of the Naushan Island, which Josiah Bradlee, in the Boston Sentinel of August 22, 1810, said would mix better with the Spanish Merino than any other breed, the cross at four to five months old being well shaped, and for thickness and firmness of wool equal to any sheep of the mixed breed in Massachusetts.

Chancellor Livingston in the second edition of his "Essay on Sheep," published in 1810, said that very little of the long wool, of sufficient strength to bear combing, of which were made worsteds and serges, was raised in the United States, nor did he think it well calculated for the climate, unless it be on the seacoast, and some of the rich meadows on the borders of rivers, or the luxuriant pastures that were found in parts of the Eastern States. The demand for this wool was yet small and would probably continue long to be so, because worsted cloths could be furnished cheaper from Europe, and particularly from England, where the long-wooled sheep were the prevailing stock, and where, for ages, they had been in the habit of working it to advantage; and because fine woolens were much warmer and softer, and would therefore maintain a preference for articles of clothing. Wool of a medium length, that is, too short for combing and too long for fine clothes, was best adapted to hosiery, and such, for the most part, was the wool of the United States, the native short-wooled flocks having from 1780 to 1809 been injured by an intermixture with the long-wooled rams that had occasionally been imported from England, Ireland, and Holland. These, without giving long wool, had spoiled the short wool, which formed a strong feature in the character of our common sheep. While we had no established manufactories, and wool was applied chiefly to hosiery, to the clothing of servants, and to greatcoats and working cloths for laborers, no distinction was made in the price or quality, and therefore every farmer was solicitous to get that breed of sheep which yielded the greatest quantity of wool.

It is estimated that in 1810 there were in the United States about 7,000,000 sheep, of which Vermont had 450,000; Massachusetts, 399,182; Connecticut, 400,000; and Pennsylvania 1,469,918. The numbers in other States are not definitely known; they were quite large in New York and New Jersey, and diminished the further we go southward.

The general character of these sheep has been told in the preceding pages. In the Eastern and Middle States and along the Atlantic seaboard States as far south as Georgia and westward over the Alleghanies

as far as English-speaking settlers had gone, they were mixed descendants of various English breeds, with a few individuals of improved varieties in favored localities, and were of the long-wooled type. South of Georgia to the waters of the Gulf of Mexico, in the pine woods of the South Atlantic and Gulf coast, in the Southwest, in Texas, and away across the continent to the Pacific coast, were found the degenerate descendants of the early Spanish importations, the American scrub of the present day, fast disappearing under good breeding and Merino crosses. A few Merino sheep were to be found in Massachusetts, New York, Connecticut, Pennsylvania, New Jersey, Delaware, and Ohio. A new era in sheep husbandry now opened, with the Merino as its foundation, and to its history, introduction, and dissemination we shall devote some space, after a brief sketch of the household woolen industry which it was destined to supplant.

Number of sheep and value thereof exported from the United States from the year ending September 30, 1790, to year ending September 30, 1816.

Year.	Number.	Valuation.	Value per head.	Year.	Number.	Valuation.	Value per head.
1790	10,058	$17,039	$1.69	1804	12,456	$30,000	$2.41
1791	10,880			1805	6,091	15,000	2.46
1792	12,213			1806	6,544	16,000	2.44
1793	12,064			1807	5,698	14,000	2.45
1794	9,577			1808	1,531	4,000	2.61
1795	6,494			1809	3,221	8,000	2.48
1796	6,140			1810	4,613	12,000	2.60
1797	3,291			1811	5,801	20,000	3.44
1798	4,808			1812	3,572	9,000	2.52
1799	9,733			1813	934	2,000	2.14
1800	9,455			1814	1,669	5,000	3.00
1801	11,621			1815	9,710	30,000	3.09
1802	12,157			1816	17,280	49,000	2.83
1803	13,677	55,000	4.02				

CHAPTER II.

THE HOUSEHOLD WOOLEN INDUSTRY—1607-1800.

Many of the American colonists brought with their sheep their spinning-wheels and looms and a knowledge of spinning and weaving, and one of their first cares was to obtain an ample supply of materials for their clothing. For the first years, both in Virginia and in New England, sheep were not in sufficient numbers to furnish wool, for which, and other raw materials, the settlers were compelled to depend upon Dutch ships which came across the ocean to trade, and from the mother country, paying for wool and cloth with tobacco, tar, potash, boards, and other products of the forest and field. When sheep multiplied and wool could be obtained the spinning-wheel and the loom were brought into play, and from that day to the present throughout this country and Canada the country people have manufactured a portion of their coarser clothing. It would be well did they do more of it.

The diminished intercourse with England, consequent upon the stoppage of emigration about 1642, and the uncertain means of communication, turned the particular attention of the colonists to the manufacture of their own linen and woolen cloth, and the more than paternal royal governors and colonial assemblies never wearied of giving orders for the preservation and propagation of sheep, the importation of cotton from Barbadoes, the saving of hemp and flax, and the fabrication of these raw materials into clothing. The first of these orders appears to have been made by the general court of Massachusetts May 13, 1640, and had reference only to linen and cotton cloth, or the product of those materials combined.

> The court, taking into serious consideration the absolute necessity for the raising of the manufacture of linen cloth, doth declare that it is the intent of this court that there shall be an order settled about it, and therefore doth require the magistrates and deputies of the several towns to acquaint the townsmen therewith, and to make inquiry what seed is in every town, what men and women are skillful in the braking, spinning, weaving; what means for the providing of wheels; and to consider with those skillful in that manufacture, and what course may be taken for teaching the boys and girls in all towns the spinning of the yarn, and to return to the next court their several and joint advice about this thing. The like consideration would be had for the spinning and weaving of cotton wool.

This order pointed to the manufacture of a cloth which then formed the principal apparel of the English people, a mixture of linen and cotton under the name of fustian, dimity, etc. There were many similar orders made by the assemblies of other colonies, which have been par-

tially given in a preceding chapter, all tending to the encouragement of household manufacture. In March, 1642–'43, an act intended to favor the New England colonies passed the English House of Commons. It exempted from duties, subsidies, and taxation all merchandise intended for their use, and all colonial produce thence exported to England. This ordinance had its intended effect in stimulating the industry of the colonists, yet it probably rather obstructed than promoted the domestic manufacture of clothing and other staple articles of English export. It furnished facilities for a cheap and constant supply of English manufactures, and rendered the colonists simply producers of raw materials. The confirmation of the law, in a modified form, became a few years after the foundation of the famous act of navigation.*

Following this act of the English Government but one year was the first regular or systematic attempt at an improved manufacture of woolen cloth made by the people of Rowley, who built the first fulling-mill erected in the North American colonies, the mill said to have been put up by John Pearson about 1643, just above the head of the tide on Mill River, where it was still in operation in 1809, and a cedar tenter-post, brought by the settlers from England, still remained perfectly sound. This appears to have been the first place at which woolen cloth was made in New England by people from the seat of the broadcloth manufacture of Old England, "many of them having been clothiers in England, till their zeal to promote the Gospel of Christ caused them to wander."

Other fulling-mills followed the erection of the first at Rowley. A second was built at Watertown in 1662, which was sold the next year to Thomas Leveran, a cloth-worker from Dedham, in Essex County, England. In 1681 one was erected at Dedham, Mass.; another at Watertown in 1686; one at New London, Conn., in 1693; one in Rahway, N. J., in 1703, and many about this time in Pennsylvania by the Quaker emigrants from Yorkshire and other cloth districts, among whom, in 1698, were enumerated dyers and fullers, comb and card makers, spinners and weavers. The first fulling-mill of Virginia appears to have been set up about 1692. Their multiplication in all the colonies from this time forbids further enumeration.

Fulling is an important process connected with the making of woolen cloth, and concerning it and wool carding deserves brief notice. As is well known, the manufacture of wool consists of two principal branches, the woolen manufacture proper and the manufacture of worsted, both based upon the qualities and character of the wool employed, and more particularly upon its length of fiber or staple. The worsted manufacture requires a wool of long staple and firm fiber, little disposed to shrink, curl, or felt in process of weaving or finishing. Wool of a long staple is the produce of a peculiar variety of sheep and varies in the length of its fibers from 3 to 8 inches. The Leicester, Romney Marsh,

*History of American Manufactures. J. L. Bishop, vol. 1, p. 303.

and other breeds of sheep known to the first settlers of the country furnished this "long wool," which was prepared for spinning by a process of combing, which is either manual or mechanical, its object being to disentangle the fibers and tufts and dispose them as nearly as possible in parallel form.

The ordinary cloth manufacture, on the other hand, employs a short, fine wool, the filaments of which are capable of being fulled or felted together without loss of elasticity in the fabric. This wool, previous to being spun, undergoes the operation of carding, like cotton, whereby the fibers are disentangled and arranged in a light, orderly lap or roll, ready to be drawn out into regular threads. The beauty of the woven fabric depends upon the fineness and smoothness of the yarn, and this upon the regularity and perfection of the carding, which again is mainly influenced by the quality of the cards and of the wool.

The fulling of cloth is commenced by scouring the fabric in water holding in suspension an aluminous clay called fullers' earth, or other detergent, to absorb the grease. It is then washed and beaten by heavy wooden mallets in a trough, soap and hot water being copiously used in the operation, whereby the cloth acquires body and thickness by a shrinking or condensing of the web nearly one-third in its length and one-half in its width. This milling or felting which cloth undergoes in the fulling stock renders the web close and compact, and increases its beauty and firmness, and is due to the peculiar imbricated or serrated structure of the filaments of wool, which become thereby closely and inextricably united, as is more perfectly seen in hat bodies and the felted cloths now made without spinning or weaving.

At the present day in regular woolen factories, many of which in the United States are very large and complete establishments, conducted with the same system that prevails in those of cotton, all the operations of scouring, carding, spinning, weaving, dyeing, and fulling are conducted on the p emises. But in early times, and in some States and most rural parts at this day, where much of the domestic wool is spun and woven in families, sometimes all, and at others a part, of these processes were carried on in the household, the wool being carded by hand-cards, spun, woven, and dyed in the family, and worn without fulling or dressing. In other cases the wool, after being sorted, picked, and oiled, was sent to the carding-mill and returned in rolls to be spun and woven, after which it was again sent to the mill to be fulled, dyed (if not dyed in the wool), and finished.*

The manufacture of wool in the colonies properly began with the first erection of fulling-mills, the woolen webs of the handlooms of the private families being carried to these mills to receive body and thickness and a better finish. This wool from inferior sheep made homespun cloth of the coarsest kind, but it was durable and comfortable. Fulling-mills increased very rapidly in number until every neighborhood seems to

* Introduction to the Eighth Census. Manufactures. 1860.

have had one, while every family had its loom and every woman was a weaver; there were also many weavers who wove on their hand-looms for the public, and some who traveled about from house to house plying their trade.

William B. Weeden, in his Economic and Social History of New England, gives the inventory of the estate of John Cornish, of Boston, indicating him to have been the pioneer of the worsted combing and weaving industry in the New World, with a mill fitted up quite complete for the time, 1695–'96.

An inventory of the estate of John Cornish, late of Boston, in New England, deceased, taken the 2d day of March, 1695–'96.

	£	s.	d.
Imprimis.			
40 pounds of worsted, at 3s. 9d	7	10	0
56 pounds of white yarne, at 1s. 3d	3	10	9
54 pounds of coverlet yarne, at 1s. 1d	2	14	0
54 pounds of mixed colored combed wool, at 2s. 9d	7	08	6
6 pounds of blue combed wool, at 2s. 9d	0	16	8
62 pounds of white combed wool, at 2s	6	04	0
8 pounds of blue combed wool, wanting cleaning, at 2s. 6d	1	00	0
279 pounds of draw white wool, at 1s. 9d	24	08	3
36 pounds of course refuse wool, at 5d	0	15	0
A parcel of pinion and course wool	0	15	0
82 pounds of copperas, at 2d	0	13	9
34 pounds of galls, at 18d	2	11	0
70 pounds of redwood, at 1s	3	10	0
60 pounds of potash, at 6d	1	10	0
35 pounds of madder, at 1s	1	15	0
230 pounds of fustick, at 18s	2	13	0
4 looms and tackling	8	00	0
2 pair of combs, 1 wrinch, warping bar, and seame	2	10	0
2 furnaces	16	00	0
1 horse, 1 cart, and the tackle to it	7	00	0
2 saddles and bridles	1	10	0
A case of pistols, holsters, 1 gun, and 3 swords	5	00	0
2 pieces of serge, containing 45 yards per piece, 40 yards, woven	8	10	0
149 yards of serge, at 3s. 6d per yard	26	01	6
40 pounds pewter, at 12d	2	00	0
1 piece of kersey, 26 yards, at 3s. 6d. yard	4	11	0
4 beds, bolsters, and pillows	8	00	0
3 pair of curtains	3	00	0
3 bedsteads	1	00	0
10 pairs of sheets	3	00	0
1 jack, 2 pits, 1 pair andirons, fire shovel, tongs, and 2 trammels	3	00	0
2 pots, 2 kettles, and 1 skillet	2	00	0
1 case of drawers, 3 trunks, 1 chest, 2 tables, cradle, 12 chairs, napkins, etc	5	00	0
Books	0	10	0
Barrels, tubs, and lumber	0	06	0
2 pairs of scales	0	16	0
His wearing apparel	15	00	0
One fulling mill, house, and land to them	60	00	0
Total	247	13	5

The inventory of Cornish [says Weeden] reveals the exact processes of his business. He dyed wool, using two furnaces, and he combed it, either colored or white. Doubtless the spinning was done in the homesteads of eastern Massachusetts by the dames, or the daughters of the dames, who had been taught in spinning classes. The farmers might have taken home the clean "top" wool, from which the "noil" or short fiber had been cleaned by the two pairs of combs worked by two men, on the market day. Another day they would bring in the spun worsted, taking their pay in cloth and yarn. The wool might be their own or "put out" by Cornish for the spinning. Evidently he traded his manufactures for that of others; he combed and wove, but he did not card or spin. The "white" and coverlet yarns were carded in the homesteads; hand cards were very common. Dyeing in two furnaces, combing with two combs, weaving with four looms, a detached and independent fulling-mill, would make a considerable business. Serge was in the looms; when finished it would be worth 3*s.* 6*d.* per yard. It was worsted or partly worsted. He had one piece of kersey, probably of carded stock, and, probably, obtained by exchange in the operations of the fulling-mill. He was a worsted comber and weaver. John Cornish was—so far as is known—the first organizer of this industry in these busy lands.

An effort was made in 1697 to introduce the manufacture of woolen cloth in the counties of Somerset and Dorchester, in Maryland, which was renewed ten years later. Neither attempt had permanent success, but nevertheless occasioned some complaints in England, as did like efforts in Virginia and other colonies, the English Government holding that such manufactures and all acts tending to encourage them were contrary to the acts of navigation.

American manufactures had slow growth, partly owing to the scarcity of proper labor, but more particularly to the restrictive measures of the English Government; and yet the latter was the incentive, at a later day, to their development.

In the sixteenth and seventeenth centuries England was struggling for the mastery of the seas, the direction of commerce, and the monopoly of manufactures. Holland was her rival. During the middle and latter part of the sixteenth century the Dutch provinces rose to industrial and commercial greatness, and their ports the chief depots and themselves the principal carriers of the world. Though destitute of forests they built more ships than all Europe besides; without mines they were the largest dealers in all metals; planting no vineyards they monopolized the wine trade. Producing almost no grain of any kind, yet, when in season of scarcity, France or England needed supplies of corn, they looked not to Poland or Livonia, where it grew, but to the cities of the Dutch, where they were always sure to find a ready and plentiful store in the best supplied granaries of Europe. Without fields of flax the cities swarmed with linen-weavers; destitute almost of sheep, Holland became the center of all woolen manufactures. And such were the repute of their fabrics and the superior facilities of their universal navigation and intercourse with other countries that English and Flemish merchants often knew no better way to forward their goods to remote places than to send them first to Amsterdam, whence they were either reëxported or purchased by the Dutch for their own consumption.

Previous to their assertion of national independence, the commerce of the Dutch did not extend beyond the confines of Europe. But new regions of traffic were now open to their dauntless enterprise, and in 1595 ships sailed into the East Indies and competed with Spain and Portugal for trade in those parts, a competition that was successful, notwithstanding the claim of Spain to exclusive rights of navigation in the Indian seas.

In 1609, Grotius published his memorable assertion of the common freedom of the sea to all nations. Its immediate object was to overthrow the Spanish claim to the exclusive navigation of the Indian and Pacific oceans, and to establish as part and parcel of the public law of Europe the right of every neutral flag to trade in those and all other seas. Spain refused to yield its claim even in preliminary negotiation, and never in fact until it had been stripped of half its colonial dependencies and utterly beaten in every quarter of the world by the free-trading Dutch and compelled to buy, for their own use, nutmegs, cloves, and mace from their hated rivals.

From this time Holland grew in maritime power and almost monopolized the carrying trade of the world. Her vessels were found in all the seas and traded in the ports of New England, New York, Maryland, and Virginia. England was jealous, and pretexts were not wanting to destroy a rival with whom it could not successfully compete. The causes of the commercial greatness of Holland were forgotten in envy at its success.

It ceased to appear as the gallant champion of the seas against Spain and became envied as the successful rival. The English Government resolved to protect the English merchants. Cromwell desired to confirm the maritime power of his country, and St. John, a Puritan and a republican in theory, though never averse to a limited monarchy, devised the first act of navigation, which, in 1651, the politic Whitelocke introduced and carried through Parliament. Henceforward the commerce between England and her colonies, and between England and the rest of the world, was to be conducted in ships solely owned and principally manned by Englishmen. Foreigners might bring to England nothing but the products of their respective countries, or those of which their countries were the established staples. The act was leveled against Dutch commerce and was but a protection of British shipping; it contained no clause relating to a colonial monopoly or specially injurious to an American colony. Of itself it inflicted no wound on Virginia or New England. In vain did the Dutch expostulate against the act as a breach of commercial amity; the parliament studied the interests of England and would not repeal laws to please a neighbor.*

A naval war followed which proved disastrous to Holland, and England gained a supremacy on the seas, which she has since maintained, and established on a firm footing the British commercial policy—protection to British shipping—which many years before she had essayed but not successfully accomplished. The English and Dutch war lasted from 1651 to 1654, and one of the first acts of the English Government directly affecting colonial trade was in 1660, when it was enacted that "no merchandise shall be imported into the plantations but in English

* Bancroft's History of the United States, vol. I, p. 145.

vessels, navigated by Englishmen, under penalty of forfeiture." This restrictive act was followed in 1663 by an act which prohibited the importation of any commodity, the growth, production, or manufacture of Europe, into the British plantations, but what was laden in England, in English ships, manned in most part by Englishmen. Thus the colonists were compelled to buy in England not only all English manufactures, but everything else that they might need from any soil but their own. The motive of this act is avowed in its preamble:

> The maintaining a greater correspondence and kindness between the subjects at home and those in the plantations, keeping the colonies in a firmer dependence upon the mother country; making them yet more beneficial to it in the further employment and increase of English shipping and seamen, and in the vent of English woolen and other manufactures and commodities; rendering the navigation to and from them more safe and cheap; and making this kingdom a staple not only of the commodities of the plantations, but also of the commodities of other countries and places for their supply; it being the usage of other nations to keep their plantation trade exclusively to themselves.

These acts were enforced in the colonies and had the effect to stimulate woolen manufacture and intercolonial trade. The activity of New England shipping was not liked by the English merchants, and at their instance Parliament resolved, in 1673, to exclude New England merchants from competing with the English in the markets of the Southern plantations; the liberty of a free traffic between the colonies was taken away, and several enumerated commodities taken from one colony to another were subjected to a duty equal to or equivalent to the duty on the consumption of these commodities in England. Adverse legislation went farther, and America was forbidden, by an act of Parliament, not merely to manufacture those articles which might compete with the English in foreign markets, but even to supply herself, by her own industry, with those articles which her position and her resources enabled her to manufacture with success.

The feeble attempts of the colonists to make a portion of their own clothing from their abundant raw materials attracted the attention of the royal governors, and was not unnoticed in England. Governor Nicholson, of Virginia, in 1698, suggested the prohibition of the cloth manufacture in the colonies, and other royal governors gave similar counsels on the subject of this and other industries and watched the development of the arts with a vigilance which betrayed the jealousy of colonial manufactures, especially that of inferior wool into coarse clothing. But inferior as was the wool, and feeble as was the attempt to manufacture it into coarse home-made clothing, the English merchant and manufacturer made complaints, because some of the product began to be exported to foreign markets formerly supplied by England, and an act passed the British Parliament in which the existence of such a manufacture in the colonies is, for the first time, recognized on the statute book. This act is thus noted by Mr. Bancroft:

> In 1699, the system, which made England the only market and the only storehouse for the colonies, received a new development by an act of Parliament, which reached

the door of every farmhouse within them, and embodied the despotic will of a selfishness known only to highly civilized life. As yet, the owners of land were not sufficiently pledged to the colonial system. Wool was the great staple of England, and its growers and manufacturers envied the colonies the possession of a flock of sheep, a spindle, or a loom. The preamble to an act of Parliament avows the motive for a restraining law in the conviction that colonial industry would "inevitably sink the value of lands" in England. The mother country could esteem the present interest of its landowners paramount to natural justice. The clause which I am about to cite is a memorial of a delusion which once pervaded all western Europe, and which has already so passed away that men grow incredulous of its former existence: "After the first day of December, 1699, no wool, or manufacture made or mixed with wool, being the produce or manufacture of any of the English plantations in America, shall be loaded in any ship or vessel, upon any pretense whatsoever—nor loaded upon any horse, cart, or other carriage—to be carried out of the English plantations to any other of the said plantations or to any other place whatsoever." The fabrics of Connecticut might not seek a market in Massachusetts, or be carried to Albany for traffic with the Indians. An English sailor finding himself in want of clothes in an American harbor, might buy there forty shillings' worth of woolens, but not more; and this small concession was soon repealed. Did a colonial assembly show favor to manufactures, the board of trade was sure to interfere. Error, like a cloud, must be seen from a distance to be measured. Somers and Locke saw no wrong in this legislation, as Jeremy Taylor and Berkeley had seen none in that which established the Anglican church in Ireland. England sought with foreign states a convenient tariff; in the colonies it prohibited industry. The interests of landlords and manufacturers, jointly fostered by artificial legislation, so corrupted the public judgment that the intolerable injustice of the mercantile system was not surmised.

In Virginia, the poverty of the people compelled them to attempt coarse manufactures, or to go unclad; yet Nicholson, the royal governor, advised that Parliament should forbid the Virginians to make their own clothing. Spottswood repeats the complaint: "The people, more of necessity than of inclination, attempt to clothe themselves with their own manufactures;" adding that "it is certainly necessary to divert their application to some commodity less prejudicial to the trade of Great Britain." In 1701, the charter colonies were reproached by the lords of trade "with promoting and propagating woolen and other manufactures proper to England." The English need not fear to conquer Canada; such was the reasoning of an American agent; for in Canada, "where the cold is extreme, and snow lies so long on the ground, sheep will never thrive so as to make the woolen manufactures possible, which is the only thing that can make a plantation unprofitable to the crown." The policy was continued by every administration.

The companion to share this restriction in the trade and manufacture of wool was Ireland. The English manufacturer had become jealous of that long-suffering oppressed country, and an act was passed this same year of 1699 prohibiting the exportation of woolen goods from Ireland to foreign parts:

It was acknowledged that the same intended not only to suppress all exportation of woolens from Ireland, but utterly to discourage the progress of their manufacture there, lest in time they should be able to work up all their own, and England be deprived of its usual supply from thence; that this was but an act of self-preservation in England, the mother country, which, therefore, as such, had a right to dictate, not only in that particular, but some others, and moreover to command a monopoly of their raw wools.*

* Bishop's History of Woolen Manufactures.

The act of 1699, which was but one of many early restrictive measures which from that time became a settled policy in regard to colonial industry, compelled their people to employ their wool in coarse but substantial household fabrics, but kept them wholly dependent upon England for the finer products of the loom, a dependence that has not ceased, for, notwithstanding the great strides made by the American industry, the United States is still the largest foreign consumer of British woolens.

It is thought, however, by some that the law was probably less instrumental in checking the disposition to manufacture at that time than it would have been in an advanced stage of the business. On account of the remoteness of the colonies from the sovereign state, and the great extent of their seacoast, it would have proved no more effectual in preventing an exportation for which they were prepared than the laws of Parliament then were against the exportation of wool from Great Britain. It was thought, a few years later, that about five-eighths of the entire English wool crop, in defiance of the laws, found its way, surreptitiously, into the markets of France and the Continent. There is little doubt that the liberality of Great Britain towards her colonies, in permitting one-half and often the whole of the duties paid on foreign linens and other goods imported into Engand to be drawn back upon their exportation to the colonies; and still more, the giving of large bounties for the importation thence of naval stores and certain materials of manufacture, had more influence at this period in diverting them from manufactures with a view to exportation than any prohibitory enactments.*

While it is true that the colonists were somewhat diverted from manufactures because they could not export them, the fact was not overlooked that they were diligent in homespun industry for home use, and Lord Cornbury, the royal governor of New York, urged the policy of encouraging the purchase of English goods by exchanging them for colonial naval stores. And he gave as an additional reason for reciprocal trade:

> Besides, the want of wherewithal to make return to England put them upon a trade which, I am sure, will hurt England in a little time; for I am well informed that upon Long Island and Connecticut they are setting up a woolen manufacture, and I myself have seen serge made upon Long Island that any man may wear. Now, if they begin to make serge they will, in time, make coarse cloth and then fine; we have as good fuller's earth and tobacco-pipe clay in this province as any in the world; how far this will be for the service of England I submit to better judgment; but, however, I hope I may be pardoned if I declare my opinion to be that all these colleneys which are but twigs belonging to the main tree (England) ought to be kept entirely dependent upon and subservient to England, and that can never be if they are suffered to go on in the notions they have, that, as they are Englishmen, so they may set up the same manufactures here as people may do in England; for the consequence will be if once they can see they can clothe themselves, not only comfortably, but handsomely, too, without the help of England, they who are already

* Bishop's History of American Manufactures.

not very fond of submitting to government would soon think of putting in execution designs they had long harbored in their breasts. This will not seem strange when you consider what sort of people this country is inhabited by.*

Cornbury's successors were equally urgent upon the point. Governor Hunter, in 1715, advised the English Government that the country people were clothed chiefly in their home product. but to compel them to wear imported goods would be too severe an expedient, and that their attention should be drawn from the home manufacture to the production of naval stores. A letter from New England to the board of trade in the same year was in similar strain. It mentions that 6,000 barrels of tar, pitch, and turpentine were sent home that year by one fleet, but that nine years before the great scarcity and dearness of woolen goods, which sold at 200 per cent advance, had forced them to set up a very considerable manufactory, still in being, for "stuffs, kerseys, linsey-woolseys, flannels, buttons, etc.," by which the importation of the provinces of New England had been decreased £50,000 per annum. That an Englishman had lost this opportunity for trade was mortifying, and, that a like occasion should not again arise, the American market was ever after kept well supplied with English goods, and the discouragement of American manufactures persistently insisted upon and avowed as the settled policy of the Government.

The cloth made at this time was chiefly of the stout and coarser kind, linen and woolen mixed, more remarkable for service than for show. The material was mostly grown upon the farms, the breaking of the flax and gathering of the wool being done by the men, while the carding, spinning, and weaving were done by the female portion of the family. The kerseys, linsey-woolseys, serges, and druggets, made of wool mixed with flax or tow, formed the outer clothing of a great part of the population during the winter season. The richer class used imported broadcloth, often white or undyed, manufactured in England, and linens made in Ireland and Scotland and on the continent.

From the early settlement, and especially at this time, many persons wore the furs and skins of wild animals. These were dressed in different ways and formed into garments variously ornamented. Elk and deer skins, particularly, were much valued, being easily made into untanned leather, soft and warm, and worn in extreme cold with the hair next the person. Much use was made of this material, to which, in fact, the early colonists were not unaccustomed, for in England at that day leather, dressed as buff and in other styles and worn as doublets, breeches, or vests, formed a considerable part of the clothing of some classes. The American colonists wore, for a long period, waistcoats and breeches of Indian-dressed skins, a custom which survived until the Revolution and formed the uniform of many of the Continental regiments, the Buckskins. These garments continued in use until after the era of Independence, and buckskin breeches, buckskin waistcoats,

*Governor Cornbury to Lords of Trade. 1705.

and a combination of buckskin and other leather could be found in the wardrobes of many of the most wealthy and noted men of the day. Nor was the use of this material confined to the men. The women wore leather jerkins and petticoats very largely, and in some of the colonies the clothing of the bed was almost entirely of leather.

Towards the year 1730 the colonists again began to attempt some rude manufactures of linen and woolen cloths, iron, paper, hats, etc., for their own use, but the British manufacturers and merchants again complained, and in consequence of their representations the House of Commons, in 1731, directed the Board of Trade and Plantations to make inquiry and report "with respect to laws, manufactures set up, or trade carried on by the colonies, detrimental to the trade, navigation, or manufactures of Great Britain." The report made in response to this order, February, 1731–'32, furnishes the fullest particulars extant respecting the manufacture of cloth at that period:

In New England, New York, Connecticut, Rhode Island, Pennsylvania, and in the county of Somerset, in Maryland, they have fallen into the manufacture of woolen cloth and linen cloth for the use of their own families only; for the product of these colonies being chiefly cattle and grain, the estates of the inhabitants depended wholly on farming, which could not be managed without a certain quantity of sheep, and their wool would be entirely lost were not their servants employed during the winter in manufacturing it for the use of their families. Flax and hemp being likewise easily raised, the inhabitants manufactured them into a coarse sort of cloth, bags, traces, and halters for their horses, which they found did more service than those they had from any part of Europe. However, the high price of labor in America rendered it impracticable for people there to manufacture their linen cloth at less than 20 per cent dearer than that which is exported from home for sale. It were to be wished that some expedient might be fallen upon to direct their thoughts from undertakings of this nature; so much the rather because these manufactures, in process of time, may be carried on in greater degree, unless an early stop be put to their progress by employing them in naval stores. Wherefore we take leave to renew our repeated proposals that reasonable encouragement be given to the same. Moreover, we find that certain trades carried on and manufactures set up there are detrimental to the trade, navigation, and manufacture of Great Britain. For the state of these plantations varying almost every year, more or less so in their trade and manufactures, as well as in other particulars, we thought it necessary for His Majesty's service and for the discharge of our trust from time to time to send general queries to the several governors in America, that we might be the more exactly informed of the condition of the plantation, among which were several that related to their trade and manufactures, to which we received the following returns, viz:

The governor of New Hampshire, in his answer, said that there were no settled manufactures in that province, and that their trade principally consisted in lumber and fish.

The governor of Massachusetts Bay informed us that in some parts of this province the inhabitants worked up their wool and flax into an ordinary coarse cloth for their own use, but did not export any. That the greatest part of the woolen and linen clothing worn in this province was imported from Great Britain, and sometimes from Ireland; but considering the excessive price of labor in New England, the merchant could afford what was imported cheaper than what was made in the country. There were also a few hat makers in the maritime towns, and that the greater part of the leather used in that country was manufactured among themselves, etc.

They had no manufactures in the province of New York that deserve mentioning;

their trade consisted chiefly in furs, whalebones, oil, pitch, tar, and provisions. No manufactures in New Jersey that deserve mentioning, their trade being chiefly in provisions shipped from New York and Pennsylvania. The chief trade of Pennsylvania lay in their exportation of provisions and lumber, no manufactures being established, and their clothing and utensils for their houses being all imported from Great Britain. By further advices from New Hampshire, the woolen manufacture appears to have decreased; the common lands, on which the sheep used to feed, being now appropriated, and the people almost wholly clothed with woolen from Great Britain. The manufacture of flax into linens, some coarse and some fine, daily increased by the great resort of people from Ireland thither, who are skilled in that business. By late accounts from Massachusetts Bay, in New England, the assembly have voted a bounty of 30 shillings for every piece of duck or canvas made in the province. Some other manufactures are carried on there, as brown holland, for women's wear, which lessens the importation of calicoes, and some other sorts of East India goods. They also make some small quantities of cloth, made of linen and cotton, for ordinary shirting. By a paper-mill set up three years ago, they make to the value of £200 sterling yearly. There are also several forges for making bar iron, and some furnaces for cast-iron or hollow ware, and one slitting mill and a manufacture for nails. The governor writes, concerning the woolen manufacture, that the country people, who used to make most of their clothing out of their own wool, do not now make a third part of what they wear, but are mostly clothed with British manufacture. The surveyor-general of His Majesty's woods writes that they have in New England six furnaces and nineteen forges for making iron, and that in this province many ships are built for the French and Spaniards in return for rum, molasses, wines, and silks, which they truck there by connivance. Great quantities of hats are made in New England, of which the company of hatters in London have complained to us that great quantities of these hats are exported to Spain, Portugal, and our West India Islands. They also make all sorts of iron for shipping. There are several still-houses and sugar bakeries established in New England.

By the last advices from New York there are no manufactures there that can affect Great Britain. There is yearly imported into New York a very large quantity of the woolen manufactures of this Kingdom, for their clothing, which they would be rendered incapable to pay for and would be reduced to the necessity of making for themselves if they were prohibited from receiving from the foreign sugar colonies the money, rum, molasses, cocoa, indigo, cotton, wool, etc., which they at present take in return for provisions, horses, and lumber, the produce of that province and of New Jersey, of which he affirms the British colonies do not take above one-half. But the company of hatters of London have since informed us that hats are manufactured in great quantities in this province.

By the letters from the deputy governor of Pennsylvania he does not know of any trade in that province that can be considered injurious to this Kingdom. They do not export any woolen or linen manufactures, all that they make, which are of a coarse sort, being for their own use. We are further informed that in this province they built many brigantines and small sloops, which they sell to the West Indies.

The governor of Rhode Island informs us, in answer to our queries, that there are iron mines there, but not a fourth part enough to serve their own use; but he takes no notice of any manufactures there. No returns from the governor of Connecticut. But we find by some accounts that the produce of this colony is timber, boards, all sorts of English grain, hemp, flax, sheep, black cattle, swine, horses, goats, and tobacco; that they export horses and lumber to the West Indies and receive in return sugar, salt, molasses, and rum. We likewise find that their manufactures are very inconsiderable, the people being generally employed in tillage, some few in tanning, shoemaking, and other handicrafts; others in building and in joiners', tailors', and smiths' work, without which they could not subsist. No report is made from Carolina, the Bahama, or the Bermuda isles.

From the foregoing state it is observable that there are more trades carried on and manufactures set up in the provinces on the continent of America to the northward of Virginia, prejudicial to the trade and manufactures of Great Britain, particularly in New England, than in any other of the British colonies; which is not to be wondered at, for their soil, climate, and produce being pretty nearly the same with ours, they have no staple commodities of their own growth to exchange for our manufactures, which puts them under greater necessity, as well as under greater temptations, for providing themselves at home; to which may be added in the charter governments the little dependence they have upon the mother country, and consequently the small restraints they are under in any matters detrimental to her interests. And therefore we humbly beg leave to repeat and submit to the wisdom of this honorable House the substance of what we formerly proposed in our report on the silk, linen, and woolen manufactures hereinbefore recited, namely, whether it might not be expedient to give these colonies proper encouragement for turning their industry to such manufactures and products as might be of service to Great Britain, and more particularly to the production of naval stores.

There is little doubt that the manufacturing industry of the colonies at this time greatly exceeded that mentioned in the foregoing report, for knowing full well that the information given would be used to their disadvantage, the manufacturers understated the truth, a fact so well known in England that English merchants complained of it.

In the year following this report (1732), England sent new instructions to all the colonial governors to consent to no acts of assembly which might injuriously affect the trade of the kingdom or might give colonial traders any preference over British merchants; and a particular account was required of all manufactures set up, traffic carried on, or laws made, likely to prove disadvantageous to the mother country. The parliamentary prohibition to manufacture in America woolen goods for exportation from one colony to another did not extend to and include hats, an article beginning to be largely produced in some of the eastern and middle colonies. But the English hatters were awake and alive to the growing trade, and they had it cut short, not only by placing hats under the same restrictions with other woolen goods, but by forbidding any colonial hatter to take more than two apprentices at once.

The result of this act was a quiet evasion of it, and hats continued to be exported to other provinces, and not unfrequently to foreign countries. Felts, which were the ordinary wear of the people, were made in large quantities, and much of the business being carried on in interior towns where sheep were abundant and wool was cheap, the manufacture was less exposed to official scrutiny than in the seaports. Another effect of this and other restrictive acts was, that the women more generally learned to weave and spin, and a large quantity of woolen, hemp, and linen cloth, and other goods was made in the privacy of the household throughout all the colonies. Nearly every family wove a part or the whole of its own clothing and blankets, and many more skilled in the art had many pieces over and above their own wants to sell to the merchants. The law could not successfully invade the home.

In 1750 a factory of woolen hats in Massachusetts was declared a nuisance and suppressed. "Parliament could club down the ripening fruit which hung in plain sight on the branches, but the million buds forming in secret under the bark, which a favoring time would eventually bring out into bloom, were beyond its reach." Although the textile inventions of Arkwright and others were early adapted to the spinning and weaving of woolen fabrics in England, the British statute of 1750, prohibiting the exportation of tools and utensils used in the silk and woolen manufactures under severe penalties, rendered it nearly impossible to obtain them. Few improvements were made, therefore, in the manufactures of wool, although an occasional attempt was made to produce fine cloth. Even the dressing of the common cloth in fulling-mills of that day was performed imperfectly and with great labor. Gig-mills for teazles were scarcely used here up to the end of the last century. The price to farmers for fulling and dressing homespun cloth was 40 to 50 cents a yard.

An English writer of this period (1759–'60), referring directly to Massachusetts, says:

> Like the rest of the colonies, they also endeavor to make woolens, but have not yet been able to bring them to any degree of perfection; indeed, it is an article in which I think they will not easily succeed, for the American wool is not only coarse, but, in comparison to the English, exceedingly short. Upon the best inquiry I could make, I was not able to discover that anyone had ever seen a sample of American wool longer than 7 inches, whereas, in the counties of Lincoln and Leicester, they are frequently 22 inches long. In the southern colonies, at least in those parts where I traveled, there is scarcely any herbage, and whether it is owing to this or to the excessive heat I am ignorant; the wool is short and hairy. The northern colonies have, indeed, greater plenty of herbage, but are for some months covered with snow, and without a degree of attention and care in housing the sheep, and guarding them against accidents and wild beasts, it would be difficult to increase their numbers to any great amount. The Americans seem conscious of this fact, and, notwithstanding a very severe prohibition, continue to procure from England every year a considerable number of rams in order to improve and multiply the breed. * * * I think, therefore, upon the whole, that America, though it may with particular care and attention produce small quantities of tolerably good wool, will yet never be able to produce it in such plenty and of quality as to serve for the necessary consumption of its inhabitants.*

The reverend author was apparently not aware of the fact that the staple of 7 inches that he condemned was better for carding and felting in the goods generally made in Massachusetts and the middle colonies than the 22-inch Lincoln and Leicester wools which he recommended. And, although it is true that the Americans did not make woolen cloths to any great degree of perfection, they did make coarse, strong, and durable goods, wearing equal to any imported from England. And this manufacture or household work was general throughout the colonies, and had our author the good or bad fortune to preach to any congrega-

* Travels through the Middle Settlements in North America, 1759–'60. Rev. Andrew Burnaby.

tion outside the seacoast towns he would have seen that his auditors, men and women, 19 out of 20, were clothed in apparel of their own make, from the hat on the head to the shoes on the feet, and that the woolen garments, most of them, were dyed yellow with the bark of the hickory.

The dyes used at this time and for many years subsequently were mostly those easily obtainable on the farm. To dye scarlet, madder was used; 1 pound of madder fresh from the garden would dye 2 pounds of wool. The wool was washed clean, then boiled about fifteen minutes in strong alum water, and the madder was boiled in thin bran water. The wool dipped from the alum water and then put in the bran water was boiled fifteen or twenty minutes, and washed out in softsoap suds after it was cool. By leaving out the alum a good brown color was obtained. A crimson color was obtained by taking 2 gallons of the juice of pokeberries, when they were quite ripe, and adding half a gallon of strong vinegar, to dye 1 pound of wool, which must be first washed very clean with hard soap. The wool, when wrung dry, was put into the vinegar and pokeberry juice, and simmered in a copper vessel for one hour, then taken out and let drip and spread in the sun to dry. The hickory and the butternut furnished familiar colors. The madder, pokeberry, and hickory were used also in the household manufacture, when it was endeavored to impart some finish to the goods, but in many cases the wool was undyed and the garment was quite as valuable.

An English official, who made some note of the growing desire among the colonists to do their own manufacturing, to the detriment of the English trader, gives some insight into the state of manufactures at this time:

> Upon actual knowledge, therefore, of these northern colonies, one is surprised to find that, notwithstanding the indifference of their wool and the extravagant price of labor, the planters throughout all New England, New York, the Jerseys, Pennsylvania, and Maryland (for south of that province no knowledge is here pretended) almost entirely clothe themselves in their own woolens, and that generally the people are sliding into the manufactures proper to the mother country, and this not through any spirit of industry or economy, but plainly for want of some returns to make to the shops; that their trade, so valuable to Great Britain, should, contrary to the policy of all other nations, be suffered to run off into clandestine channels, and that colonies, on which the fate of this country will be found to depend, should, without the least regard to influence of impressions early made on the human mind, be suffered to remain in this day under these little, factious democracies which had their first rise in the republican ideas of licentious times.

That "little, factious democracies," the outcome of "licentious times," should clothe themselves and "slide" into manufactures proper to the mother country was an apparition that alarmed every British storekeeper, and the greedy British trader had his alarms embodied in the acts of the British Parliament suppressing American industry and American trade.

The rigid enforcement of statutes whose sole object was to keep the

Americans a race of farmers and foresters to raise raw materials for British manufacturers and naval stores for British shipping, making them depend upon British factories for their clothing and British ships for their trade, was detrimental to American prosperity, humiliating to American pride, and could not continue forever. No nation can raise enough agricultural products to pay for all that it consumes. The American colonies in their highest prosperity could not and did not do it. They never exported to England enough to pay what they bought of her, and made up the difference in money which they received for large quantities of provisions sold to the West Indies, in defiance of the British laws prohibiting such trade. The consequence was an impoverishment of the colonies, a severe drain on their resources. In 1760 the imports from England exceeded $12,000,000; the exports to England amounted to less than $4,000,000. In 1771 the imports were $20,000,000; the exports less than $7,000,000.

The growing homespun or household industry received a new and healthy impulse through the non-importation agreement entered into just before the outbreak of the Revolution, when great efforts were made to increase the product of wool and other material and to encourage the household economy. A very complete fulling and dyeing establishment was nearly completed by Tunis Popham, at Jamaica, Long Island, in 1764, and in October of the same year it was said that a company had established a woolen factory at Hempstead, Long Island, where broadcloths of any color could be supplied equal in quality and cheaper than any imported. But these attempts of Yorkshire weavers to manufacture broadcloths on Long Island did not succeed. It is not supposed, however, that their ill success could be attributed to want of patronage, as it was deemed patriotic then to use articles of domestic product almost exclusively, and in the following year a society was formed in New York to encourage the home manufactures of woolens, the enthusiastic members of which signed a pledge not to buy imported cloth and not to eat the meat of sheep or lamb. The great want of the country was a supply of wool; and the killing of sheep was discouraged by this society and by public sentiment in order not to diminish the source of supply. Homespun cloth became the rage and continued so for some time, and British imports fell off.

Most of the colonies now encouraged wool raising and manufacture by local statutes, exempting sheep from taxation, protecting them from dogs, and giving premiums for spinning and weaving. In 1770 the graduating class of Harvard College attended commencement exercises dressed in black cloth of New England manufacture, but this was probably of inferior grade, nothing else than the common domestic cloth made in nearly every family and which formed the staple product of the country for ordinary wear. The woolens made consisted of two kinds, one a strong, coarse, all-wool cloth, three-quarters wide, which was sometimes fulled, but was often worn undyed and undressed; the

other a kind called linsey-woolsey, made of linen warp and woolen woof. The manufacture of that day was of the most simple description. The wool, being washed, was combed as nearly straight as possible by two cards, with leather backs and wire teeth, held in the hands of the worker. The wool was detached from the cards in a long soft roll, which was then made into yarn upon the simple spinning-wheel of those days, known now, unfortunately, merely as a curiosity to ornament an antiquarian corner in the home. A large light wheel, kept constantly in motion by the hands of the woman worker and afterwards by her foot by means of a treadle, caused a single spindle to revolve with great velocity, giving to the yarn its twist, the hands of the operator regulating the supply of wool and consequent size of the yarn. The cloth was taken from the hand loom and the weaver to the fuller and the fulling-mill, of which nearly every community had one, who was the only one in the industry carrying on his business publicly and for a number of customers. The fuller was also a dyer, whose colors were not always fast and would run. "Bright colors were liked by gentlemen for coats in that age, bright blue, scarlet, claret color, etc. But, while a great deal of cloth was made of those hues, it always behooved the owner of the coat to keep out of the rain."*

An early instance of factory-made cloth is noted in the following announcement, made in the Essex (Salem, Mass.) Gazette of May 1, 1770:

> Last Thursday, the premium of four guineas on the best piece of Broad Cloth bro't to Edes & Gills' Printing office, in Boston, for sale, of twelve yards long and seven-quarters wide, was adjudged to Mr. Toby, Cambridge & Co., of Lynn, who, from the first of June, 1769, to the first of May, 1770, have made upwards of five hundred yards of Broad Cloth, and upwards of three thousand yards of Narrow Cloth, from the first of April, 1769, to the first of April, 1770.

It is barely possible that the Harvard graduating class purchased their black cloth of the above firm, whose factory was so near them. Of the extent of manufactures in the colonies, previous to the Revolution, we have no reliable statistics. It had not then become the business, nor was it considered worth the trouble, to go from house to house and through the log huts and cottages of the poor to count their yarns and their stockings, and "to mark the humble, yet great efforts, which were silently, but securely, working the independence of a future mighty nation." Before the revolutionary disputes commenced the people had begun to feel that they would be compelled to render themselves less dependent upon Great Britain, and companies were formed for the encouragement of domestic manufactures, particularly manufactures of woolen goods. The first business of the Pennsylvania assembly, in the session of 1774, was the passing of resolutions to prevent butchers from killing sheep, recommending frugality and attention to domestic manufactures, and announcing their determination as individuals to have no dealings with those who, in consequence of the scarcity

*Industrial History of the United States. Albert S. Bolles.

(which appeared approaching) should raise the price of their goods. In the city of Philadelphia alone, the number of sheep used in 1775 was 20,000 less than had been used in the preceding year, which was due to the patriotic resolve of the inhabitants not to eat mutton, that the sheep might be preserved for its wool. At Savannah, Ga., there was an association entered into by the deputies of the provincial congress "to encourage frugality, economy, and industry, and to promote agriculture, the art and manufacture of America, especially that of wool; and to discountenance and discourage every species of extravagance and dissipation, especially horse racing and gaming."

The General Congress of the colonies in October, 1774, "under the sacred ties of virtue, honor, and love of country," pledged themselves and their constituents not to import British goods, and to use their utmost endeavors to improve the breed and increase the number of sheep, by killing as few of them as possible and not exporting them, but selling on moderate terms to their neighbors who might need them, to practice economy and industry, and to promote the agriculture and manufactures of the country, especially that of wool. These resolutions met with unanimous approval of the people, and those who disregarded them were published as enemies to public liberty. All the dwellings and workshops in the land felt the stimulating effect of these resolves, and industry was awakened. The congress of deputies which met at Annapolis in December, 1774, renewed the resolution to encourage the breeding of sheep and to promote the woolen manufacture, which was followed by Massachusetts the same month, which colony recommended the people to improve their breed of sheep and secure the greatest possible increase of them; the use of their own woolen manufactures, and a careful sorting of the wool, so that it might be manufactured as much as possible into the best goods; the establishment of one or more manufactures of wool-combers' combs; the use of domestic hosiery, and the use of their own manufactures and those of their sister colonies in preference to all others.

South Carolina encouraged the raising of cotton and North Carolina encouraged manufactures by offering premiums, among which was one of £100 for six pieces of woolen cloth, well dressed, each piece 25 yards, and Essex County, Va., offered a bounty of £50 to any person who would produce 500 pairs of men's and women's stockings manufactured in the county, one-third to be worth 1*s.*, one-third worth 2*s.*, a third worth 3*s.*, sterling, a pair; the county to have the refusal of them at 75 per cent on these prices.

The province of Virginia followed the action of Massachusetts, elsewhere stated, and urged the importance, wisdom, and necessity of a State in providing within itself a supply of articles necessary for subsistence, clothing, and defense, and recommended that no persons should use in their families, unless in case of necessity, and in no case to sell to butchers or kill for market, any sheep under four years old;

that the woolen, cotton, and linen manufacture ought to be encouraged, especially coating, flannel, blankets, rugs or coverlets, and hosiery, and that fulling mills should be erected; also mills for breaking, swingling, and softening hemp and flax.

At the beginning of the Revolution the household industry of the New England colonies and some parts of New York, Pennsylvania, New Jersey, and the southern colonies was nearly or quite equal to the ordinary wants of the inhabitants for clothing, but as the struggle went on the health and comfort of the soldiers suffered for the want of suitable woolens, which became very scarce and dear, causing many appeals to the people to increase their stock of sheep and supplies of wool and other materials and to promote the fabrication of cloth for the bodies of their destitute countrymen in camp and in the field. It was suggested that the cloth be dyed brown. A man who furnished his own blanket was allowed $2, and was permitted to take it away with him at the end of the campaign.

Wool rose rapidly in price, and its deficiency in the manufactures of the country was apparent in the contributions for the army. An instance to the point:

A letter from Samuel Wetherill, jr., to the Board of War, in May (1777), informs them that, in consequence of the unexpected rise in the price of wool and labor, he would be unable to comply with a contract made for a supply of cloth at a time when he supposed prices were at the highest. He had a factory, including dye-house, fulling-mill, etc., in South Alley, between Market and Arch and Fifth and Sixth streets, where he carried on the manufacture of woolens, and soon after, if not at that time, of cottons and chemical products. Wool being then 7*s.* 6*d.* a pound, with a prospect of its becoming 10*s.*, he could not furnish for less than 27*s.* 6*d.* such cloth as he had engaged to supply at 20*s.* the yard. He rendered an account the next month for cloth furnished, including some samples of superfine red and coating; but the extreme scarcity of wool, he says, almost discouraged him from proceeding with the woolen branch of his business. Those who had engaged to sell him wool at 7*s.* 6*d.* thought it too cheap, and his spinners and weavers in each branch had doubled their wages. He could continue to make it, however, at an adequate price. These prices, which were doubtless provincial currency, and the fact that all the operations of carding, spinning, shearing, etc., were manual operations, and that 40 to 50 cents was the usual price for fulling and dressing a yard of cloth, enable us to comprehend that, with an empty exchequer and doubtful credit, Congress found no little inconvenience in providing supplies of clothing and other necessaries.*

The suffering of the army at Valley Forge in the winter of 1778, half-clad and freezing, is known to every American schoolboy, and dampened the ardor of the people. Manufacturers could not get supplies of wool and would not dispose of what little stock they had to a Government whose currency was rapidly depreciating and whose cause seemed almost hopeless. But, thanks to our French alliance, money was raised in France and in the Netherlands on French security, and English goods, principally cloths, were purchased in Holland and shipped to America. More, however, was done by the women of America, for the

* Bishop's History of American Manufactures.

patriotic cause was anchored to every fireside in the land. While the men fought or toiled in the fields the women kept alive the household industry, sheared the sheep, and made shirts, drawers, and stockings of wool, woolen mittens and tippets, and wool caps with generous ear-tabs.

Peace had a depressing effect upon the woolen manufactures. The factory industry had languished and almost perished during the long and impoverishing war, and to crown the disaster the English merchants poured immense quantities of goods into the American markets, swamping the little American manufacture that had survived and draining the country of its resources to pay for them. And the more certainly to crush the American manufacturer and establish the English goods some of them sold in the markets of Boston and New York 25 per cent cheaper than in London.

During the war increased attention had been given in some quarters to wool-growing and cotton-culture, and the household industry had been preserved and extended. During the same period great improvement had also been made by the English in their manufacture by the use of improved machinery. When it was sought to obtain this machinery for the American manufacturer the English Parliament set its face against it by reënacting a statute made in 1774 and extending and strengthening it to the effect that any person who packed or put on board any vessel, or caused to be brought to any place in order to be put on a vessel, with a view to exportation, "any machine, engine, tool, press, paper, utensil, or implement, or any part thereof, which now is or hereafter may be used in the woolen, cotton, linen, or silk manufacture of this Kingdom, or goods wherein wool, cotton, linen, or silk are used, or any model or plan thereof," should forfeit every such machine, the goods packed, and £200, and be imprisoned for twelve months. The same penalties were laid against having in custody or power, or collecting, making, applying for, or causing to be made, any such machinery, and the forfeitures were to go to the use of the informer after the expenses of prosecution were satisfied. This act was passed in 1781, and the next year a similar one was passed against the exportation of machinery or tools used in the manufacture of linen and cotton.

In 1786 wool or stock cards not exceeding 4*s.* per pair and spinners' cards not exceeding 1*s.* 6*d.* per pair, used in the woolen manufacture, were allowed to be exported, a condescension induced from the fact that the Americans were then making very good articles in that line, a manufacture with which the English manufacturer desired to compete, and, if possible, drive to the wall. The various enterprises now attempted and the efforts made to obtain improved machinery can not be particularized in the scope allowed in this report. Suffice it to say that they were numerous, but that the English statutes, vigilantly enforced, along with those against enticing artificers to emigrate, proved obstacles too

serious to be overcome and delayed the introduction and use of the new machinery.

Meanwhile English and East India goods glutted the American markets, drained the country of money to pay for them, and built up a debt that was onerous. A necessity for the creation of domestic manufactures was apparent and deeply felt. Cotton was increasing in the South, sheep were multiplying in the Middle States and at the East, and their wool was fairly good. The foundation was good, but the superstructure was wanting. Newspapers and public men impressed the importance of the subject, and the farmer and laborer hoped for its fruition, that the field of agricultural products might be extended and industry encouraged.

When direct statistics are wanting, as at this point, other facts can be used to advantage. That a variety of manufactures from domestic and foreign materials struggled into existence in 1787 to 1789 is evinced by the well-known cultivation or production in those years of flax, hemp, and wool, furs, skins, tallow, and importations of raw material, with but small exports, a showing that enables us to infer that the extent of our manufactures equaled the amount at least of the raw material produced in the country. Artisans' tools and all machinery were exempt from duty, and in many States an artificer was allowed the right of citizenship upon his declaration of intention to pursue his calling. Frequent acts were passed in the several States encouraging the raising of sheep, principally for their protection, by imposing heavy taxes on dogs, acts that were repealed and reënacted according as patriotism and the public good or the spirit of the demagogue moved the mind of the legislator. Prior to this time lambs were not generally shorn the first year, but in 1787 it was advised, as being better for the animals, and as tending to the increase of the quantity of wool to shear them.

Among the early manufactures of the country and one of the most successful was that of hosiery. Knit stockings were known in England as early as 1533, although ordinarily cloth hose were worn. Worsted stockings were not known until some time after, and at the time of the first English colonization of America were certainly not possessed by one in a thousand. Yet "among the articles of outfit provided in 1629 to be shipped to New England we find mention of 800 pairs of stockings, 200 of which were to be Irish, at 13*d.* a pair in Dublin, and 100 pairs of knit, at 2*s.* 4*d.* a pair; also 500 pair of redd knit capps, milled, about 5*d.* a piece." These articles are included in the same invoice with "sutes of dublett and hose of leather lyned with oyled-skin leather, y^e^ hose and dubletts with hooks and eyes" and with "breeches" or "leather drawers," which at that time, and for many years subsequently, were a much more common article of apparel than knit hosiery.*

Though mainly dependent upon importations from England, the early

*Felt's Annals of Salem, Vol. I, p. 49, and Introduction to Eighth Census, p. xli.

colonists encouraged the household manufacture of their own wool into stockings with such effect as to produce large quantities of coarse woolen hosiery. Much of the wool in colonial times was spun as worsted, that is, with a double thread, and was used for knitting. Virginia on several occasions offered premiums for worsted goods, but it was the Dutch and German settlers of New York, New Jersey, and Pennsylvania that excelled in this branch of household industry. Stockings of red, blue, or green worsted were among the articles which a thrifty Dutch matron was proud to display beside her stores of bleached homespun linen. We are told that knitters of coarse yarn stockings in Pennsylvania, in 1698, received half a crown a pair. The German Palatines, who about that time settled at Germantown, Pa., established the hosiery manufacture at that place, which has ever since taken the lead in the manufacture, particularly of frame-knit goods of cotton thread and worsted.

Germantown hosiery became an attractive feature of the semi-annual fairs established by William Penn in Philadelphia, which drew visitors from neighboring States, and it was always to be found on sale in the market house in the city. Previous to the Revolution the manufacture was essentially a household one and embraced only coarse articles of ordinary wear. Frame-work knitting appears to have been introduced into this country before the Revolution, either by the Germans of Pennsylvania or by English artisans from Nottingham and Leicester, many of whom settled in New York and other eastern and middle States. The earliest mention we find of stocking weaving is in 1723, when one Matthew Burne, of Chester County, Pa., is mentioned as having served John Camm one or two years at stocking-weaving, during which time Camm's stockings obtained some repute. Mention is also made of a stocking manufactory at Annapolis, Md., about the year 1747, which was regarded as a great curiosity, but did not succeed. In 1776 the committee of safety in that State appropriated £300 to enable Mr. Coxendorfer, of Frederick County, to establish a stocking manufactory. A society of arts, established in New York in 1764, offered, among other premiums, £16 and £12 for the two largest quantities of three-thread wove stockings made in the province during the ensuing year. In March, 1766, the same society proposed a premium of £10 for the first three stocking looms of iron set up during the year, and £5 for the next three, and £15 for the first stocking loom made in the province. It also continued the premium of £10 for the largest quantity, not less than 100 pairs, of thread or worsted stockings made. In 1777 it was stated that there were one hundred stocking-weavers with their looms at Lancaster, Pa., then the largest inland town in the country, and that they were all out of work. There were only three stocking-weavers there in 1786.*

Stocking factories and other woolen establishments increased

*Introduction to the Eighth Census of the United States. Manufactures.

throughout the country, but it was still the family knitting and weaving that supplied the greater part of the consumption. Jefferson wrote in 1783 as to Virginia:

> No manufacture of stocking weaving, consequently none for making the machine * * * though in almost every family some is manufactured for the use of the family, * * * the rich either have a weaver among their servants or employ their poor neighbors; among the poor, the wife weaves generally.

It is estimated that at this time (1783–'84) all the shoes used in the State and three-fourths of the clothing were made from materials grown on Virginia farms, including the cotton used, and a few years later the home industry had so increased that throughout the whole State three-fourths of all the clothing were manufactured by the people, who, before the war, had imported seven-eighths of it. Farther to the south the household manufacture of clothing was quite as large, but it was mostly of cotton. In the Eastern States domestic industry was prominent. Connecticut made a surplus, which was sold out of the State, and in Massachusetts the importation of foreign manufactures was less by one-half than it was twenty years before, although population had greatly increased, and considerable quantities of home-made articles were shipped out of the State. The dress, furniture, and outward cargoes gave evidence of the increase of domestic production. In one regular factory there were made as many as 10,000 pairs of cotton and wool cards, chiefly employed in the domestic manufactures throughout the Union.* Similar progress had been made in Rhode Island and New Hampshire, the former being well advanced in linen manufacture, though in Providence and vicinity much wool was manufactured into cloth, and it was hailed as an indication of progress in manufactures; that early in 1789, John Brown, of that town, one of the wealthiest merchants and manufacturers in New England, appeared dressed in cloth made from the fleeces of his own flock, the yarn, it was added, being spun by a woman 88 years of age. The cloth manufactured in Providence was 30,000 yards, of wool, in 1790, and in 1791 3,165 yards of woolen cloth, 512 of carpeting, and 4,093 pairs of stockings, all of household make. There was no established manufactory of any extent in New Hampshire, though the large number of fulling-mills spoke the extent of the woolen household manufacture. New Jersey had no woolen factories, but she had many fulling-mills for household woolens. Pennsylvania abounded in fulling-mills, and the household manufacture was active. Many counties in the State had small factories.

As a whole, the year 1788 found the country in possession of a well-established woolen household industry, furnishing a portion of the people good, though coarse, durable clothing from wool grown on the farms of a sturdy yeomanry, and it has truly been said by an economist that "when the great economy to which the entire population

* Bishop's History of American Manufactures.

outside of the large towns had been inured, and the less artificial wants of all, compared with those of the present generation, are taken into account, it may be questioned if the people of that day were not as really independent of other countries for such necessaries as their descendants at present."

While as a general thing the home manufacture of the extreme South was of cotton, it must be noted that South Carolina paid great attention to the increase and improvement of wool and was the first to propose the introduction of the Merino sheep. This was in 1785, and at that time, or very soon thereafter, fulling-mills had been erected in Pendleton district and a fulling and dressing mill on Fishing Creek, near the Catawba River, where dyeing, fulling, and dressing were done by operators from Great Britain. The wool of the country was very fine and it was mixed with cotton as an experiment.

The woolen manufacture made an appreciable advance when a manufactory was put in operation about 1788 at Hartford, Conn., by Col. Jeremiah Wadsworth and others, encouraged by the State authorities. We are informed that between September, 1788, and September, 1789, about 5,000 yards of broadcloth, cassimeres, serges, etc., were made at this establishment, some of which sold at $5 a yard. Gen. Washington, who made a tour of the East in the latter year, visited this manufactory, in company with Col. Wadsworth, Mr. Ellsworth, Col. Jesse Root, and others, on the 26th of October, at which time it was in full operation. Washington pronounced the broadcloth good, not yet of the first quality, but he ordered some of the broadcloth for his own wear and a piece of serge to make breeches for his servants. He is said to have read his speech to Congress, in the ensuing January, in a full suit of broadcloth made at this factory and presented by the owners. Col. Wadsworth, an active patron of domestic industry, John Jay, the minister to France, and Baron Steuben, besides other prominent gentlemen, set the example of wearing the mixed gray or pepper-and-salt cloths made at this factory, which were exceedingly durable. Washington recorded in his diary that "all the parts of this business are performed at the manufactory, except the spinning; this is done by the country people, who are paid by the cut." "Robert Pierpont, a cloth-dresser of Hartford, in the seven months following September, 1789, finished at one press 8,134 yards of cloth, of which 5,282 yards were fulled cloth."

A woolen manufactory set up at Stockbridge, Mass., about this time made between 5,000 and 6,000 yards of fulled cloth annually. Another was in operation at Watertown in 1790, and in 1796 Middlesex County had twenty-four fulling-mills. Many of the interior towns produced large quantities of woolen cloth, which kept many fulling-mills and small establishments employed in dressing and dyeing it. In Worcester County, preëminently agricultural, fulling-mills and clothiers' establishments had increased in 1792 to between thirty and forty in number,

chiefly employed upon the homespun fabrics of the farmers. "Cloth of fine scarlet and deep blue, which were then favorite colors, was made and dressed in a creditable manner."

A considerable branch of the woolen manufacture was the making of wool hats. Nearly every State in the Union was engaged in the business, and there was no community without its hatters. Pennsylvania took the lead in this industry, for which wool was imported from the Eastern States. The wool and fur hats of Pennsylvania alone were about 212,000 in 1790, and more than her consumption, and the manufacture was brisk in the counties beyond the Alleghanies.

The condition of the woolen industry at the time is found in a report made to the House of Representatives December 5, 1791, by Alexander Hamilton, Secretary of the Treasury. After an enumeration of several important branches of manufactures that had already grown up and flourished with surprising rapidity, viz, those of skins, iron, wood, flax, and hemp, and "hats of fur and wool, and mixtures of both," Hamilton adds:

Besides manufactories of these articles, which are carried on as regular trades, and have attained to a considerable degree of maturity, there is a vast scene of household manufacturing, which contributes more largely to the supply of the community than could be imagined, without having made it an object of particular inquiry. This observation is the pleasing result of the investigation to which the subject of this report had led, and is applicable as well to the Southern as to the Middle and Northern States. Great quantities of coarse cloths, coatings, serges, and flannels, linsey-woolseys, hosiery of wool, cotton, and thread, coarse fustians, jeans, and muslins, checked and striped cotton and linen goods, bedticks, coverlets, and counterpanes, tow-linens, coarse shirtings, sheetings, toweling, and table linen, and various mixtures of wool and cotton, and of cotton and flax, are made in the household way, and in many instances to an extent not only sufficient for the supply of the families in which they are made, but for sale, and even in some cases for exportation. It is computed in a number of districts that two-thirds, three-fourths, and even four-fifths of all the clothing of the inhabitants are made by themselves. The importance of so great a progress as appears to have been made in family manufactures within a few years, both in a moral and political view, renders the fact highly interesting.

Neither does the above enumeration comprehend all the articles that are manufactured, as regular trades. Many others occur which are equally well established, but which, not being of equal importance, have been omitted. And there are many attempts, still in their infancy, which, though attended with very favorable appearances, could not have been properly comprised in an enumeration of manufactories already established. There are other articles, also, of great importance, which, though, strictly speaking, manufactures, are omitted, as being immediately connected with husbandry; such as flour, pot and pearl ashes, pitch, tar, turpentine, and the like.

In a country the climate of which partakes of so considerable a proportion of winter as that of a great part of the United States, the woolen branch can not be regarded as inferior to any which relates to the clothing of the inhabitants. Household manufactures of this material are carried on in different parts of the United States to a very interesting extent; but there is only one branch which, as a regular business, can be said to have acquired maturity. This is the making of hats. Hats of wool, and of wool mixed with fur, are made in large quantities in different

States, and nothing seems wanting but an adequate supply of materials to render the manufacture commensurate with the demand.

A promising essay towards the fabrication of cloths, cassimeres, and other woolen goods is likewise going on at Hartford, in Connecticut. Specimens of the different kinds which are made, in the possession of the secretary, evince that these fabrics have attained a very considerable degree of perfection. Their quality certainly surpasses anything that could have been looked for in so short a time and under so great disadvantages, and conspires, with the scantiness of the means which have been at the command of the directors, to form the eulogium of that public spirit, perseverance, and judgment which have been able to accomplish so much.

To cherish and bring to maturity this precious embryo must engage the most ardent wishes, and proportionable regret as far as the means of doing it may appear difficult or uncertain. Measures which should tend to promote an abundant supply of wool of good quality would probably afford the most efficient aid that present circumstances permit.

To encourage the raising and improving the breed of sheep at home would certainly be the most desirable expedient for that purpose; but it may not be alone sufficient, especially as it is yet a problem whether our wool be capable of such a degree of improvement as to render it fit for the finer fabrics. Premiums would probably be found the best means of promoting the domestic and bounties the foreign supply. The first may be within the compass of the institution hereafter to be submitted. The last would require a specific legislative provision. If any bounties are granted they ought, of course, to be adjusted with an eye to quality as well as quantity.

A fund for the purpose may be derived from the addition of 2½ per cent to the present rate of duty on carpets and carpeting, an increase to which the nature of the articles suggests no objection, and which may at the same time furnish a motive the more to the fabrication of them at home, towards which some beginnings have been made.

Early in 1792, when Hamilton's report was published in England, it created such apprehension that meetings were called in the manufacturing towns to consider it, and Manchester alone, at a single meeting, so it was stated, subscribed £500,000 toward a fund to be invested in English goods and shipped to this country for the purpose of glutting the market and blasting in the bud the hopes of American manufacturers. Whether from this fund or from others we know not, but, at this time, machinery of one or more woolen mills of New England was purchased, taken out, boxed, and shipped to England; some woolen and cotton mills that were burned were charged to that influence, and it was alleged that British agents busied themselves in Rhode Island, Connecticut, and Massachusetts, and in parts of New York and Pennsylvania, in buying up the finest wooled sheep and selling them to the butchers. Those which they could not persuade Americans to eat were salted down and sent as provisions to the West Indies.

In 1792 the town of Ipswich granted land to John Manning upon which to build a woolen mill, and subsequently made an additional grant, and in 1795 the town confirmed to Dr. Manning the land under the building. This building was 105 feet long, 32 feet wide, and two stories high, of wood. The original design was to make woolen goods, and for a few years broadcloth, blankets, and flannels were manufactured; all the carding, spinning, and weaving were done by hand, but

not proving profitable cotton was substituted for woolen manufacture, and in 1800 its operations entirely ceased.

In June of this year (1794), the first incorporated woolen factory in Massachusetts was erected, at the falls of the river Parker, in Newbury. The machinery was made in Newburyport, by Messrs. Standring, Armstrong, and Guppy.*

This factory was run by Arthur Scholfield and other English operatives, who recently emigrated in company with Samuel Slater, the founder of the cotton manufacture in New England, to which use the factory was afterwards converted.

In recent years claim was made that the first incorporated woolen company to begin business was at Oriskany, N. Y. The claim was disputed and a committee of the "Rhode Island Society for the Encouragement of Domestic Industry" was raised to investigate the subject. The report was in favor of the Newbury company, and embraced some facts of interest, the substance of which were that, in March, 1793, John Scholfield, with his family, and Arthur, son of Arthur Scholfield, who lived at Standish-foot, in Saddleworth, Yorkshire, England, sailed from Liverpool for the United States, arriving in Boston the May following, and took up their residence in Charlestown, near Bunker Hill. Here they remained until August, making some preparations and constructing some machinery for the manufacture of woolen cloth. Having introduced themselves to Jedediah Morse, author of Morse's Geography and Gazetteer, as being manufacturers, and well skilled in the most approved method of manufacturing woolen goods in England, they were by him introduced to some persons of wealth in Newburyport, who, availing themselves of the knowledge which they possessed, at once put up a factory at Byfield, on the Parker River, near Newbury, under the immediate supervision of John and Arthur Scholfield, and they there constructed the first carding machine for wool that was put in operation in the United States. This was constructed and first operated by hand, before the factory was ready to receive it. When all the machinery was constructed according to their direction, the factory went into operation, and John Scholfield was employed as an agent, and the business was conducted prosperously. This was the first woolen factory erected and conducted advantageously in the United States, all previous attempts having been rendered unprofitable by reason of imperfect machinery. John Scholfield erected other mills in various parts of Massachusetts and Connecticut, and in 1800 Arthur Scholfield removed to Pittsfield, Mass., built a carding machine, and went to carding rolls and manufacturing. Bishop, in his "History of American Manufactures," says that the Byfield factory, probably the largest then in the country, proved unprofitable in the hands of the Scholfields. The shares were one by one transferred to William Bartlett, and by him to John Lee, one of the original company, who, in 1806, converted it into a cotton factory.

* History of Newbury. Joshua Coffin.

One of the most noted towns for woolen manufactures is Pittsfield, Berkshire County, Mass. It was settled in 1752, incorporated in 1760, and in February, 1770, Valentine Rathbun started the first fulling-mill, charging 40 to 50 cents for fulling and finishing a yard of cloth. In 1776 another fulling-mill was put up as a rival, and from time to time new clothiers' works were established, and in 1805 these establishments had become so numerous that an association for mutual protection was suggested.

In 1800 Arthur Scholfield removed from Byfield to Pittsfield and put up machinery for a woolen manufactory. He was compelled to construct it without patterns or drawings, and was even forced to return to England to refresh his memory before he could complete a wool-carding machine, which was put in operation in 1801, and carded wool at 12½ cents a pound. The first fine broadcloth made in this country was by Arthur Scholfield in 1804, made from the fleeces of imported Merino sheep, presumably of the Humphreys importation. The cloth was a gray mixed, and when finished was shown to the different merchants at Pittsfield and offered for sale, but could find no purchasers in that village, and was then sent to New York. A few weeks subsequently Josiah Bisell, a leading merchant in town, made a voyage to New York for the purpose of buying goods, and brought home two pieces of Scholfield's cloths, which were purchased for the foreign article. Scholfield was sent for to test the quality, and after pronouncing it very superior exhibited to the surprised merchant his private mark on the goods he had rejected a few weeks before.

In 1807 Elkanah Watson introduced into Berkshire County the first pair of Merino sheep from the Livingston flock, from the fleeces of which in the following year Mr. Scholfield made 13 yards of black or blue-black broadcloth, superior to any yet made in the country. Samples were sent to the different cities and accounts of it were published, with the cost of manufacture, and excited much interest throughout the country. This piece of broadcloth, 13 yards, was presented to James Madison, and it is said that his inaugural suit was made from it.

The French revolution and the declaration of war against England and Holland in 1793, soon after the establishment of the National Government of the United States, and the passage of a tonnage bill, and the war between England and Spain in 1796, which continued with but a brief interval until all Europe was involved, crippled European commerce and opened to the American merchant and American ships no small portion of the trade of the world. England's superior navy rendered intercourse between the European powers at war with her extremely difficult. Much more difficult, however, was the intercourse between these continental states and their colonies. They were, therefore, obliged to depend, in a great degree, upon neutrals to carry on the trade between them and their distant colonies in the East and West Indies. The spices, teas, and other products of these colonies had no

other way of reaching Europe without great expense and risk of capture but by the aid and under cover of a neutral flag. The United States was happily situated in relation to the West India Islands, whose ports were now thrown open to them, and their long habitual intercourse with them naturally threw a large share of this trade into the hands of American merchants. The trade did not stop at the West Indies, for the encouragement given by the act of 1789 had increased the tonnage of the United States, and the spirit and enterprise of the people led them to employ their increased shipping in the more distant trade of the East Indies, and, indeed, every other part of the world. And so it came about that American vessels engrossed nearly the entire carrying trade of Europe and conveyed thither or to American ports to be reëxported, the valuable articles of colonial produce, such as sugar, coffee, indigo, pepper, and spices of all kinds. These and other articles were allowed, under certain regulations, to be exported from the United States with a drawback of the duties paid or secured to be paid on their importation.

This transfer of the carrying trade of Europe gave, in consequence, an immense impulse to the foreign commerce and agriculture of the United States. The high prices of agricultural products during the next few years, and the great profits on shipping, stopped investment in manufactures, withdrew capital from them, and concentrated money and enterprise in shipbuilding, which increased to a degree unparalleled in ancient or modern history. The manufactures of Great Britain found good markets in the United States; the manufactures of woolen did not increase in the United States, and all along the seaboard, where prosperity reigned, British cloths were worn principally, and the domestic and household production was diminished or pushed westward with the tide of emigration moving in that direction.

The new and back counties supplied themselves with clothing from the fleeces of their own sheep. Outside of the seacoast towns, and away from the few factories just struggling into life, the New England people still wove and wore homespun. In New York every farmer manufactured in his own family all the cloth he wanted, and as he moved westward his sheep, the spinning-wheel and the loom went with him, and the wool that he manufactured was fine; worth at that time 4*s.* per pound, when a market was to be had, but as every farmer raised a few sheep the sale was inconsiderable. In New Jersey, the country adjacent to New York and Philadelphia supplied itself from these cities with foreign goods, and so great had the rage for foreign goods become that it attracted the thoughtful attention of patriotic men. One of them said:

> By what strange fatality has our homespun gone out of fashion in a country that ought to glory in it, and in which its perpetuity would annually have saved thousands of pounds? How I have been delighted to behold, in the county of Bergen piles of this home-wrought woolen, not only intended for the dress of our men, but

for the future investment of the delicate limbs of my fair countrywomen, towering like an Egyptian pyramid. * * * This laudable economy was not peculiar to Bergen. It is not long since that the manufacturing of our own cloth was very general among our farmers. Why is it discontinued? * * * Those who have sheep can certainly make homespun to advantage. * * * But, alas, the rage for foreign finery. * * * Let us make homespun.*

And he advised the women to make their petticoats of homespun, and counseled the farmers to depart from the practice of selling their best lambs to the butcher, and at the same time urged the utility of exchanging rams with some distant farmer every year.

While Livingston's picture was true as regards Bergen and the country immediately adjacent, it was not strictly so as to the interior counties off the great lines of travel; there the small flock of sheep and the household industry supplied a greater part of the clothing.

Outside of Philadelphia and Lancaster the homespun manufacture was still carried on by the farmers, who usually kept from 40 to 50 sheep, yielding about 2½ pounds of wool each, to supply the family with wool for clothing and a little surplus which was made into hosiery or yarns and sent to the town markets. The sheep generally yielded excellent wool, and the farmers improved them by getting good rams wherever they could be found.

In Delaware and Maryland there was a considerable homespun manufacture from good wool, fine and short, but the fleece seldom weighed more than 3 pounds.

The tide-water region of Virginia was generally supplied with clothing made from English goods, which were paid for by tobacco and other agricultural products, but in the interior and mountain counties, and particularly in the Shenandoah Valley, there was a large household manufacture, the surplus over the family wants supplying the wants of those engaged in other occupations. In the vicinity of Staunton there was a considerable manufacture of wool hats. Wool was worth about 25 cents a pound, according to the demand, and according to general account sheep were tolerably plenty, but of an inferior and ugly breed. Taken as a whole, the wool of Virginia was considered superior to any other in the Union at that time.

In North Carolina there was some homespun manufacture in the interior of the State, and in the mountain counties, where the wool was very fine and had a good staple, but on the seaboard cloth and clothing were obtained from the proceeds of tar and pitch shipped abroad. The people of Charleston and the coast towns of South Carolina imported their woolens from England, but in the upper country necessity compelled the inhabitants to provide for their respective wants from their own resources, in consequence of the difficulty and expense of conveying bulky articles from the seacoast to the interior. The traveler there soon became accustomed to the humming music of the spinning-wheel

*Ex-Governor William Livingston (1801).

and the loom. Cottons and woolens of various descriptions were made in quantities sufficient for domestic use. Georgia was similarly situated. Her seaboard population imported their woolens from England, those in the interior raised fine sheep, giving good wool, from which they made the few woolen goods worn in that temperate country.

In this rapid sketch of the condition of the woolen manufacture at the close of the last century it is impossible to give statistics, for none have been collected, but it may be stated that from 1790 to 1800 we manufactured all our own wool, for, in 1790, none was exported; none in 1792; none in 1799 and 1800. But we imported some wool from Europe and manufactured it in America, thus showing that we did not raise all the wool that we manufactured. The raw wool was wanted and the farmers did not raise enough of it for the manufacturing demand of families and the few factories then in operation. It was the want of this supply of wool, coupled with the large importations of English woolens, that forced some of the early woolen mills into the cotton manufacture.

Nor was the great prosperity of the agricultural and commercial classes, and the earnings of capital in mercantile ventures at the beginning of the century, favorable to the growth of the woolen manufacture. The merchant was satisfied that he could make more money by carrying goods than in making them, and the agriculturist was satisfied to buy the clothing his household industry did not supply him, by exchanging therefor the product of his fields. Consequently, industry and capital found employment in trade and the manufacturing interest made no progress.

The great discouragement to manufactures was the prejudice against everything of home production. For years after the Revolutionary war, and particularly in these days of high prosperity, foreigners dictated the fashions and directed the sentiments of the fashionable circles of our commercial cities, and our own citizens allowed themselves to be taught that American people and American products were inferior to those of foreign production, and some of the present day are still taking the same lesson.

But the household industry was not suffered to decline. The American farmer made most of his own clothing, and he was the last to encourage foreign goods, ape foreign manners, or adopt foreign fashions. It is true that the most wealthy of these, the large planters and some near the coast, bought foreign clothing, but the great mass, the tillers of the soil, those who grubbed and those who followed the plow, that class among whom true nationality and patriotism dwell and always have dwelt, wore homespun goods. The household industry or family clothing manufacture in wool, as well as cotton and hemp, was very considerable. The country made up all its own wool, flax, and hemp. Stocking knitting was carried on to some extent in Pennsylvania, and the great

body of farmers' wives and daughters were employed in knitting and weaving.

A great drawback also to the extension of the woolen manufacture was the scarcity of wool, and the inferior character of much that was available. To the many arguments put forward for the encouragement of the manufacture the reply was that, in truth, America raised very few sheep in comparison with Great Britain, perhaps not one-tenth in proportion to the number of the inhabitants, and so little care was taken to raise a good breed of sheep that the wool was ten times less valuable, which gave a hundred fold advantage to Great Britain. As was the wool, so was the mutton, and the prejudice against the mutton must be removed before the woolen manufacture could be placed on any considerable footing. The result was, so the answer ran, that although it might be true that we manufactured all our own wool, yet that all was hardly worth notice, because it was manufactured into coarse fabrics which did not greatly enhance the value of the raw material. And to the proposition that foreign artisans should be invited to engage in the woolen manufacture, answer was made that the European manufacturer would be greatly deceived who should come to the United States under the impression of being able to establish a manufactory of any extent. Let him know that very little combing wool was to be met with, and that there were no comb-makers nor a comb machine, and he would soon be persuaded of the infant state of the manufacturing industry. Others argued that the woolen industry was on the decline, and cited the Germantown stocking weavers who worked wool some months in the year, and who had about 100 looms going at the close of the Revolutionary war, which had been reduced to thirty, and in twenty years more would be gone entirely unless a great change was made in our manufacturing notions and fashions.

And, again, there were many who thought the country too young for manufactures, and that the arts by introducing luxury would also introduce vice and wean the people from that simplicity of manners which was believed to belong exclusively to agricultural life; and there were very many others who had strong affection for the mother country, and preferred dependence upon her, and who were joined in the influence which the merchants had in shaping legislation. All these and other influences worked against our woolen manufactures at this period.

Some encouragement was given to manufactures by a portion of the press and by far-sighted men through its columns. It was urged, now that the country had capital, that it "exchange hands in the circle of reciprocal wants at home. Let us work up our iron, our cotton, our wool, our own earths." It was insisted that our attention should be directed to plain, substantial manufactures, and chiefly such as depended on machinery and the saving of labor, and that while it was not our interest to become a manufacturing nation it was our duty not to

be a poor, indigent, and dependent one; that no nation could be independent unless it could clothe as well as feed its people.

Meanwhile the mills already established manufactured woolen goods in a rude and modest way; entreaties were made to the farmers to increase the number and improve the breed of their sheep, and Seth Adams in 1801, Col. David Humphreys and Chancellor R. R. Livingston in 1802, imported Merino sheep, and a few scattering notes of new fulling-mills appear. In July, 1805, James Tatterson, of Bridgehampton, Long Island, proposed to put up a cotton and woolen factory of twelve looms to make broadcloth, carpets, coverlids, vest patterns, etc., and called for support in the undertaking to establish domestic manufactures. In the same year wool-carding machines on the European plan were in operation in Mifflin County, Pa., one on Lost Creek, and another at John Flemming's mill, in Kishacoquilles Valley, and it was advertised that "1 pound of grease must be sent to 8 of wool. It will be picked, broke, and carded into rolls for 10 cents a pound, with 2 cents for mixing and 5 cents for breaking only. The rolls will be so packed as to be carried on horseback 40 miles." Some notices of manufacturing domestic flannel from American wool appear, and a statement that several Southern gentlemen had entered into arrangements for coarse clothing for servants. In 1806 a machine for carding wool was set up near Trenton, N. J., and a person who recommended it said he hoped that now people would make their own cloth, as "many raise sheep who never before raised any, and those who before raised a few now raised a large number," and the editor of the Trenton True American in publishing this fact took occasion to advise the farmers to have good wool by preserving their best lambs and feeding them well. The same paper, in the following year (1807), notices that Mr. Ralston, at Mendham, had begun the manufacture of woolen goods, and again calls on the farmers to encourage the manufacture by improving their sheep. "Something has lately been done; let them get the best breeds, sell the smallest, house and feed them during the winter, and keep them always in good condition."

From this time a great change came over the industries of the country, and the cause was in the relation of European powers one to another, and their bitter and sanguinary struggle for commercial and political supremacy. The seizure of American vessels by Great Britain; the American non-importation act of April 18, 1806; the British orders in council of May, 1806, blockading the German ports; Napoleon's Berlin decree of November 21, 1806; the British order of January 7 and November 11, 1807, followed by the Milan decree of December 17, 1807, almost completely swept the prosperous American commerce from the ocean; and to crown all, the American Congress passed the embargo act forbidding American ships to sail from home ports, which delighted Great Britain, who was quite willing that the enterprising Yankee skipper should remain at home. In the United States the in-

telligent people were unable to see what benefit could be derived from their ships rotting in the ports, seamen out of employment, the industry of the country prostrated, and agriculture in decay; and murmurs were heard on every side, rising in places to resistance. First, the shipping interests suffered, then the planters and farmers complained, and, on March 1, 1809, the embargo was repealed and there was substituted for it another nonintercourse act. But the embargo had done its work. It had about completed the overthrow of the foreign commerce of the United States.

Some good grew out of the embargo. As shipping declined manufactures increased. Capital invested in commercial enterprises being in great danger, it was withdrawn and applied to manufactures, and small factories rapidly multiplied. Those of woolen did not feel the first impulse, for the reason that more money could be made from the cotton manufacture, and from another good reason, that there was not a supply of wool beyond the needs of the household make. In fact, there was not a sufficiency for household purposes, and complaint was made of the farmer that he did not raise enough to keep his daughters busy; that the time lost for want of it, between sunset and bedtime, would suffice to make clothing for all the people and give some cloth for export.

There was a great change taking place, both in appreciation of American goods and in the disposition to encourage and promote their manufacture. It was no longer considered beyond the pale of good style to dress in American goods; and from the President of the United States, at his official reception, down to the most humble in the land, to be clothed in homespun was the proper thing. And as this disposition ran parallel with necessity, the household manufacture was greatly extended. This furnished goods of a coarse character, but for the manufacture of fine woolens fine wool was needed. Now began, also, a keen appreciation of the few Merino sheep in the country, and prices rose rapidly from $100 to $1,000 for a single animal; whole flocks of common sheep were crossed with them, and factories went into operation in many places, backed by the capital that had been withdrawn from commerce. Wool, which had risen to $1 per pound in 1807, now rose still higher, Chancellor Livingston selling some full-blooded Merino wool, unwashed, for $2 per pound.

The estimated production of wool in the United States in 1810, to supply the factory and household demand, was 13,000,000 to 14,000,000 pounds, which many sources of information agree in stating was neither equal to the amount required nor of good quality. But this quality was now to be vastly improved by the infusion of more new blood of the fine-wooled sheep, and causes that operated to force the country into extended woolen manufacture opened the way to supply the fine wool.

The temporary suspension of American commerce by the proclamation of August 9, 1809, reëstablishing the nonintercourse act, was fol-

lowed on May 1, 1810, by an act opening trade. Immediately the ports of the United States sent out hundreds of vessels freighted with the accumulated produce of two years, and the ocean was covered with sails speeding for Archangel, Gottingen, Lisbon, Cadiz, and elsewhere, everywhere to find a market for flour, corn, rice, tobacco, and other stores. Lisbon and Cadiz were favorite markets, and their provisions ruled high, the British army being one of the best customers. Fortunately for the United States, these vessels had arrived and were arriving when the advance of the French armies on the two cities and the misfortunes and necessities of the Spanish cause forced the sale of choice Spanish flocks, and over 26,000 Merino sheep were purchased and shipped to the United States in 1810 and 1811, 20,000 of them being safely landed, and distributed over the country from Maine to Georgia and far into the interior. The introduction of these sheep marked the beginning of a new era in the American woolen manufacture, the departure from the household woolen industry to that of the fine-wooled manufacture, founded on the improved and fine wool of the Spanish Merino.

In 1777 the English House of Commons ordered an account made of the value of all woolen goods, viz, baize, cloths, coatings, flannels, serges, says, stuffs, mixed, carpets, and worsted stockings, exported from England to all countries during the years 1772, 1773, 1774, 1775, and 1776. The accompanying table shows the custom-house valuations:

Valuations from 1772 to 1776, inclusive.

	1772.	1773.	1774.	1775.	1776.
	£	£	£	£	£
New England	284,554	147,718	168,815	8,383	15,657
New York	128,879	76,496	129,547	345	.....
Pennsylvania and New Jersey	216,055	135,119	217,205	210	.....
Maryland and Virginia	185,437	99,208	133,912	6	.....
Carolina	84,227	73,403	91,361	1,106	.....
Georgia	26,492	16,982	14,627	39,719	.....
	925,644	549,028	755,467	49,709	15,657
All other colonies in British America	108,224	137,935	145,437	210,832	269,481
All other countries of the world	3,402,915	3,188,966	3,432,679	3,959,572	3,542,915
	4,436,783	3,875,929	4,333,583	4,220,173	3,868,053
Per cent to the American colonies	20.86	14.17	17.43	1.17	.....

Statement showing the proportion of the English manufacture of woolens exported to the United States from 1790 to 1799.

Year.	United States.	All parts of the world.	Percentage to United States.	Year.	United States.	All parts of the world.	Percentage to United States.
1790	£1,481,378	£5,190,637	28.53	1795	£1,982,318	£5,172,884	38.33
1791	1,621,796	5,505,034	29.82	1796	2,294,942	6,011,123	38.17
1792	1,361,753	5,510,068	24.89	1797	1,901,986	4,936,355	38.33
1793	1,032,954	3,806,536	27.13	1798	2,309,925	6,499,399	36.92
1794	1,391,877	4,390,939	31.76	1799	2,905,490	6,876,939	42.75

CHAPTER III.

INTRODUCTION OF THE SPANISH MERINO SHEEP.

The improvement of American sheep and wool, fine-wooled sheep-breeding and wool-growing, and the rise and establishment of the fine-wooled manufactures, began with the introduction of the Merino breed of Spain. That beautiful country of a blessed climate has long been distinguished for its sheep. The early writers on agriculture describe various breeds of sheep as existing in Spain; they were of different colors—black, red, and tawny. The black sheep yielded a fine fleece, the finest of that color then known; but the red fleece of Boetica—Granada and Andalusia—was of still superior quality, and, as Pliny remarks "had no fellow." This fine-wooled sheep is thought to have left its primitive home in Asia Minor, and following the line of civilization been introduced successively into Greece, Italy, and along the shores of the Mediterranean to Spain, receiving in each country for many centuries great care and improvement, culminating finally in the establishment of the finest wooled breed of the world. Columella, Pliny, and others, before the Christian era and many since, have written and are now writing on the subject, and it would be a difficult task to contribute any new material or to put the old into a new garb. Nor can a good excuse be made for the attempt when such excellent authorities and charming writers as Youatt, Low, Livingston, and others have put within our reach clear and scholarly chapters. Youatt believes that they were imported from Italy and that they were of the Tarentine breed, which had gradually spread from the coast of Syria and the Black Sea, reaching Spain before the Christian era. Here they made great improvement and were the objects of the greatest care. The best of these sheep were the *Transhumantes* or migratory ones—those which passed the summer in the mountains of the north, and the winter on the plains toward the south of Spain. How the great improvement has been made which produced this unrivaled sheep history does not inform us. The excellency of the Merinos consists in the fineness and felting property of their wool and in the weight of it yielded by each individual sheep; the closeness of that wool and the luxuriance of the yolk, which enables them to support extremes of cold and wet quite as well as any other breed; the ease with which they adapt themselves to every change of climate, and thrive and retain, with common care, all their fineness of wool under a burning tropical sun and in the frozen

regions of the north; an appetite which renders them apparently satisfied with the coarsest food; a quietness and patience into whatever pasture they are turned, and a gentleness and tractableness not excelled in any other breed. The average weight of the fleece in Spain is 8 pounds from the ram and 5 from the ewe.

The Spaniards long preserved the monopoly of this race of sheep with jealous care. To allow their departure from Spain without special permission of the sovereign was punishable with death or heavy penalties, according to the rank of the offender. Other countries, however, at length were able to carry off the invaluable Golden Fleece of Spain, and the Merino race is spread over the greater part of Europe. It has been taken to Asia and to the southern extremity of Africa, has been brought to America, and been introduced on the boundless plains of Australia and New Zealand, in all of which places it has been found to retain, with wonderful constancy, the characters which were imprinted on it in its native pastures, and in many cases to surpass in useful properties those of the parent stock.

It is estimated that in the sixteenth century the *Transhumantes*, or migratory sheep of Spain, numbered 7,000,000; under Philip III the number fell to 2,500,000. At the beginning of the eighteenth century it was placed at 4,000,000. It is the general opinion of those qualified to judge that at the beginning of the present century the migratory sheep numbered 5,000,000. And now began the decline both in the condition and the sacredness of her flocks and her monopoly in fine wool. War desolated her soil and the once fine flocks fell away under the rapacity of the soldiery. Napoleon entered Spain; his soldiers and those of Wellington slaughtered and ate thousands of sheep; the French marshals and generals drove other thousands out and transported them to their estates; thousands were shipped to England, and still other thousands to the United States, and the once famous cabañas were extinguished forever. Not as immediately, but quite as effectually, had another agency been at work to pull down her monopoly in fine wools. At various times, from 1723 to the close of the century, several princes and persons of Europe had obtained permission to take from the kingdom small flocks for the improvement of the common or native sheep of their respective states. Great care and skillful breeding carried the improvement forward until at last Saxony appeared in the markets of Europe with a wool superior to the far-famed wool of Spain, and broke down her monopoly. The Saxony Merino had eclipsed its progenitor, the far-famed Merino of Spain.

When too late the Spanish Government saw the errors it had committed, or allowed the kings to commit, in permitting, through an excess of kingly courtesy, the dissemination of the fine-wooled Merino over Europe to states friendly and unfriendly. Though the law against the exportation of these sheep was very severe, it was frequently violated, and numbers of the finest animals were taken from the flocks in Spain,

driven through Portugal and shipped from Portuguese ports to foreign countries. Adventurers of every degree engaged in this business, the most noted one being George III, king of Great Britain, who sent his secret agents into Spain. These purchased a few inferior animals, smuggled them out of the kingdom, drove them across Portugal and shipped them from Lisbon to England. When the Spanish Government realized the fact that the German states were rapidly improving their fine wools, that France was doing the same, and that England was also bent on the same project, all through the superior Spanish Merino, it put forth efforts to stem the disaster which was menacing the interests of the country, by repeating the stringent orders against the exportation of any more fine Merino sheep. It was a feeble effort, but it was all that feeble Spain could do. By a royal decree, June 24, 1798, it was ordered that owing to the high price of flesh and wool in Spain under no pretext should it be permitted to export sheep from the kingdom.

This order might do very well as against the king's own loyal subjects, but it did not avail against Napoleon's bayonets and the hunger of his men, nor the rapacity of his marshals, who, it is said, drove over 200,000 of the finest sheep of Spain into France in the years 1809 and 1810. Again, in December, 1810, the Council of Regency of Spain prohibited the exportation of sheep, and again in 1816, after the overthrow of Napoleon had restored the Bourbons to their thrones in Europe, the king of Spain resolved that "under no title or pretext shall it be permitted to export Merino sheep." Similar royal orders followed in 1819 and 1827. These later orders were of little moment, for nearly every country then equaled, if it did not excel, it in the quality of its wool, and all had within their boundaries better mutton.

We have no record of any action for the improvement of our American sheep by the introduction of the Spanish Merino until 1785, when the "Society for the Promotion of Agriculture" of South Carolina offered a medal for the first flock of Merino sheep kept in the State. No response seems to have been made to this offer, and no importations of Merino sheep are known to have been made to any of the States until eight years later, when, in 1793, William Foster, of Boston, Mass., a young gentleman of means, being on his return from Spain, "with much difficulty and risk," got out of that kingdom, "smuggled," in plain words, and brought home with him three Merino sheep—two ewes and a ram. Foster purchased these three sheep of a drover from the Sierra Morena on condition that he should bring them down with the drove for the shambles and deliver them outside the city to a certain fisherman, who smuggled them on board the ship *Bald Eagle*, Capt. John Atkins. Soon after his arrival at home Mr. Foster was obliged to sail for France and left the three Merinos with his friend Andrew Craigie, of Cambridge, as a present, who, not appreciating their value, killed and ate them, pronouncing the meat as very delicious. Some years after Mr. Foster met Mr. Craigie at an auction near Boston buying a Merino ram for $1,000.

The next importation was a joint one of Dupont de Nemours and M. Delessert, a Parisian banker. De Nemours migrated with his family to the United States in 1799, and took up his residence on the banks of the Hudson. Before this he had been associated with the commission appointed by the French Government to select, in Spain, the large flock of Merinos conceded by the secret clause of the treaty of Basle. In his retreat on the Hudson he bethought how valuable some of these Merinos would be to the United States, and arranged with Delessert, who also owned a seat on the Hudson, to ship four ram lambs to America, three of them intended for their own farms, and the fourth for President Jefferson. Three perished on the long voyage, but one, Don Pedro, costing $1,000, arrived safely July 16, 1801, and was taken to Dupont's place on the Hudson, near New York City. In 1802, when Dupont returned to France, Don Pedro was placed on Delessert's farm, near Kingston, and was used there for nearly four years, to the great advantage of breeders and the improvement of their flocks. In 1805, Delessert rented his farm and sold his sheep at auction. Don Pedro was bought by Dupont's agent for $60, and taken to E. I. Dupont's farm in the vicinity of Wilmington, Del., where he became the sire of many fine-wooled flocks. The half and three-quarter blood ewes, nearly 100 in number, were sold to the farmers around Kingston, on the Hudson, at a price much lower than that realized for common sheep, and more than half of them perished of neglect the following winter. In commenting upon these facts, Chancellor Livingston remarks:

> Such is commonly the case where novelties are introduced in agriculture, till the mind of the husbandman is prepared for their reception. I knew the importance of the object, and I resolved to leave no means unessayed to convince my fellow-citizens of it.

Livingston went to the accomplishment of his purpose by purchasing all he could find of the scattered remnant of Delessert's flock, securing twenty-four ewes, at prices which attracted the notice of those who had seen and neglected them. These descendants of Don Pedro he crossed with his own importations from the government flocks of France.

E. I. Dupont, to whose farm near Wilmington Don Pedro was taken in 1805, had a small flock of Merinos at that time, and, being anxious to improve the breed in the country, offered the farmers the free use of the ram, which, generally, they were slow to accept. In 1808, with a view of increasing his own flock, he purchased from his neighbor farmers as many half and three-quarters blood of the Don Pedro stock as he was able to collect. He was so far successful in the increase of his flock by these purchases and the natural increase that, in the summer of 1810, on a space of ground about three miles long and from two to three broad, there were more than 1,500 sheep, nearly one-half of them different grades of Merino, and Mr. Baudrey, a neighbor and business associate, who owned a flock of 600 sheep, had obtained a shepherd from

AFTER VERMONT REGISTER.

SPANISH MERINO RAM "DON."
PRESENTED TO ARTHUR YOUNG BY GEORGE IV., ABOUT 1790.

France and some shepherd dogs from Spain. Merino sheep had become plentiful in the vicinity of New Castle, Del., in 1809, and twenty-eight gentlemen were named who, on account of these sheep, forbade hunting on their grounds with dogs and guns. These sheep were not all full-blood Merinos, nor were they all descendants of Don Pedro; some were descendants of the importations of Chancellor Livingston and Col. David Humphreys.

In 1809–'10, E. I. Dupont & Co. erected woolen mills on the Brandywine, and in their manufacture used the wool of the neighborhood. A newspaper of the day remarked that the introduction of Merinos promised to remove any objection to the scarcity of fine wool, and another that "in the neighborhood of Wilmington patriotism and public spirit is unparalleled in raising and procuring Merino sheep." In 1812 the flock of Dupont & Co. was, perhaps, the largest and best in America. One gentleman, near Wilmington, not connected with the factory, had, in 1810, 400 sheep, direct descendants of Don Pedro, and in 1812 the number of the Merinos had increased to such a degree that an enthusiastic writer declared that the adjacent country was full of sheep and wool, one of the staples of the farmer; that ten years more and the country could send broadcloth to England, should the Government permit it, or at least supply that country with Merino wool, "having enough for ourselves and to spare, for the sheep improve with us and the stock is increasing with unheard-of rapidity." In 1814 there were in the hands of twenty-one farmers in the immediate vicinity of Wilmington 4,300 sheep, of which 746 were full-blooded Merinos, 2,317 mixed blood, and 1,239 common sheep of the country, of superior kind. The Merino and mixed bloods were descendants of Don Pedro principally. The descendants of Don Pedro were not confined to Delaware, but extended as far south, at least, as Maryland and Virginia, and north into Pennsylvania, in addition to the blood he left in New York. Joseph Dougherty, near Alexandria, Va., bred them, and in 1810 offered for sale "several three-eighths-blooded Merino rams of Mr. Dupont's stock, yeaned in February," and at the same time would "let for the season a three-fourth-blood, weight on hoof 115 pounds, his fleece 6 pounds 12 ounces." On September 5, two rams and a ewe of this stock were sold at auction at Philadelphia, and on November 27 following Edward Lloyd was inaugurated governor of Maryland dressed in a full suit of homespun, fine green cloth, manufactured from Merino wool of the Don Pedro sheep, from his own farm on the eastern shore, equal in texture and fineness to any of the European cloths. On May 15, 1811, at the fair at Georgetown, D. C., a premium was given of $40 to Roger Brooke, of Montgomery County, Md., for his half-blooded Merino ram Hopewell, of Dupont's breed, and in the preceding year Mr. Dupont exhibited two rams at the same fair. Notices of this stock at various points in the five States named were common from 1809 to 1814.

Don Pedro is thus described in 1810:

He is stout, short, and woolly; his horns are large and spiral; his legs short, and he weighs 138 pounds; his fleece carefully washed in cold water weighs 8¼ pounds; is extremely fine; the staple 1¾ inches long, and lying very thick and close upon his body; it is entirely free from loose coarse hair called jarr. Every part of his fleece is nearly of equal fineness; even the wool of the hind legs and thighs, which is long and coarse upon many Merino sheep, is short and fine upon Don Pedro.

In August, 1801, Seth Adams, then of Dorchester, Mass., imported a pair of Spanish sheep which had been taken from Spain into France, and Mr. Adams laid claim to the fact that he had imported the first pair of Merinos into the United States. He says:

The Agricultural Society of Massachusetts having offered a premium of $50 for the importation of a pair of sheep of superior breed, Gen. D. Humphreys imported a flock of Merinos, and sent some of them into Massachusetts, and he, or some one for him, applied to the society for the premium. Knowing that his sheep did not arrive before the spring season after mine, I applied at the same time for the premium, and after having examined the sheep and wool, and comparing with those of Gen. Humphreys, the society awarded to me the premium and awarded to Gen. Humphreys a gold medal for having imported a larger number.

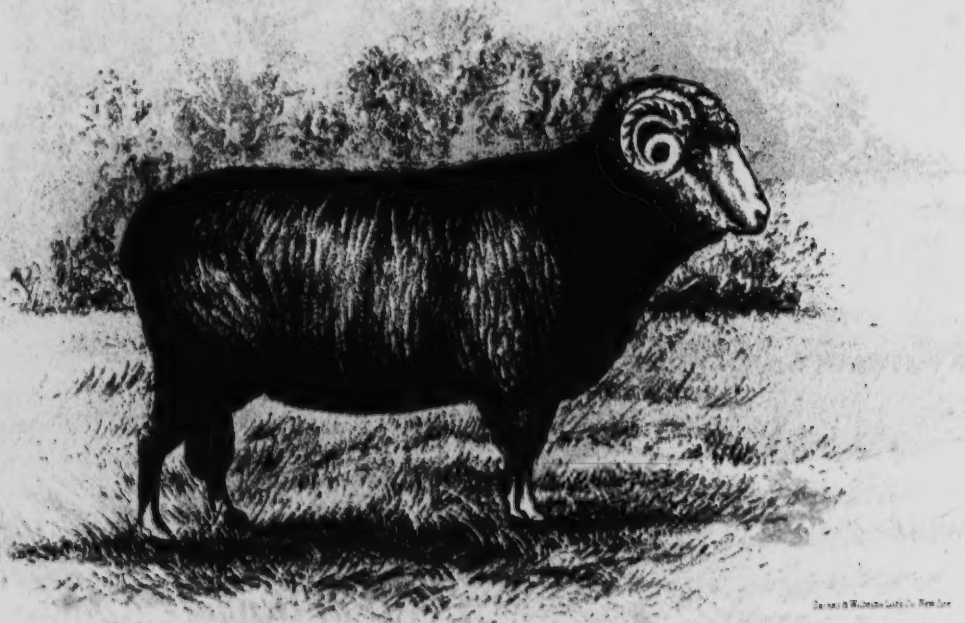
This statement varies somewhat from the records of the society for 1802, which show that a letter was received from Colonel Humphreys on the Merino breed of sheep, with a specimen of their wool, and remarks on the importance of propagating said sheep in the Northern and Eastern States. The letter made mention of the fact that the writer had imported into Connecticut seventy-five ewes and twenty-five rams. The subject was referred to a committee, consisting of Mr. Lyman, Mr. Cabot, and Dr. Dexter, to consider the same and report thereon.

The introduction of Merino sheep may be dated from this time, and so important it seemed that, at the next meeting of the trustees after Col. Humphreys' letter was received, the question was raised, whether Col. Humphreys should receive the gold medal for his services, and at the following meeting it was awarded to him, not to exceed fifty dollars in value. A premium had already been offered to the person who should introduce Merino sheep into the country, and the amount paid in this way was very considerable. The first claimant for this premium was Seth Adams, for the importation of two sheep of the Merino breed from France.

From these two statements it would appear that honors were easy as between Mr. Adams and Col. Humphreys, the former being awarded a premium of $50 and the latter a gold medal of that value. The premium was given under this offer of the society:

An annual premium of $30 for each year previous to 1805 to the person who shall introduce into the State of Massachusetts a ram or ewe for the purpose of propagating a breed of sheep superior to any in the State at the time they are so introduced. If from a foreign country, $50.

Mr. Adams did not remain in Massachusetts, but, in 1807, removed to Muskingum County, Ohio, taking with him 25 or 30 sheep, descendants of the pair imported in 1801. "These sheep were pure white and very beautiful, unlike the common sheep. The wool was



MERINO RAM "DON PEDRO,"

IMPORTED FROM FRANCE BY M. DESSELERT, 1801.

FROM "VERMONT SHEEP BREEDERS' REGISTER."

close, fine, and oily—caught the dust easily and became quite dirty." A number of these sheep, or their immediate descendants, were sold to residents of Kentucky, the first pair to Judge Todd, of that State, who paid $1,500 for the pair. This was in 1809, and these Merinos were the first that went into Kentucky. A New England paper of 1810 records the fact that "Seth Adams has carried 176 Merinos to Kentucky and Tennessee," and a letter published in the National Intelligencer (Washington), dated Marietta, Ohio, July 17, 1810, says: "The enterprising Mr. Seth Adams arrived at this place on the 9th instant, on his way to Kentucky and Tennessee, with 176 Merino sheep from the flock of Col. D. Humphreys, of Connecticut." We have another glimpse of these sheep as they journeyed through Pennsylvania on their way to Kentucky. A letter from Chambersburg, June 12, 1810, says:

Two hundred and three Merino sheep belonging to Col. Humphreys, of Connecticut, passed through this borough on Saturday last, on their way to Kentucky. They were all males and none less than half-blooded. We understand that Mr. John Ranfrew, of Guilford Township, and Mr. John Hetich, of this borough, each bought one of these valuable animals, which had become lame with traveling, the only ones the agent of Col. Humphreys was authorized to dispose of.

Of these Humphreys sheep a contemporary paper says: "A small proportion only of his flock were of the full bloods, the balance being the produce of a cross upon the native sheep of the country." Another paper: "Shortly afterwards Mr. Prentice, Mr. Lewis Sanders, and other spirited gentlemen, introduced a number of the full-blooded Merinos."

In December, 1810, Mr. Adams writes from Zanesville, Ohio, to Hon. William Jarvis, then sending Merinos from Lisbon to the United States:

I have had the breed of sheep a number of years, and am continually applied to for the full bloods, and know almost every person in this State or Kentucky who is in want of them; and I have some conditional engagements for the next year. I imported in the year 1801 a pair of these sheep, the first pair ever imported into the United States, but I have but a small number of the full-blooded, and I intend rearing of them, and as I am known to have the stock, have a very great advantage over any person on this side of the mountains.

The historian of Stark County, Ohio, says that the first Merinos brought into Ohio were doubtless by Mr. Adams, and that they were Humphreys Merinos, "undoubtedly the best ever imported into the United States, by whatever name called." He kept them part of the time in Washington, and afterwards in Muskingum County.

He had a sort of partnership agency from Humphreys for keeping and selling them. They were scattered, and, had they been taken care of and appreciated, would have laid a better foundation of flocks in Ohio than any sheep brought into it from that time until 1852.

Of such great importance did it appear to the settlers of the Western country that this breed of sheep should be widely distributed, that in the latter part of 1807 and early in 1808 the newspapers proposed that

every bank having national encouragement should be obliged to give assistance in procuring them and providing for their care and increase.

Whether from the flock of Seth Adams or that of Col. Humphreys, through sales made by Elisha Ives at Pittsburg, or from the later importations of William Jarvis, does not clearly appear, but probably of the latter, through Mr. Adams, Story & Nichols, of Georgetown, Ky., had a flock which was sheared April 24, 1812, by William Story. The flock consisted of sixteen full-blooded Merinos, ten of which were imported from Spain. The product was as follows:

	Pounds.	Ounces.
A buck (Judas), fleece weighed	12	4
A buck (Don Carlos), fleece weighed	9	12
Eight imported ewes (average), fleece weighed	7	11
An ewe lamb (Sancho), 15 months old, fleece weighed	9	0
A buck (Palleford), 15 months old, fleece weighed	8	8
An ewe lamb, 15 months old, fleece weighed	7	8
A young buck (Columbus), 10 months old, fleece weighed	7	0
A young buck, 10 months old	5	0
A young ewe, 10 months old	5	4

About 100 prominent citizens of Scott County attended the shearing, all of whom were surprised to see that the wool of the Merino should so far exceed in quantity and quality the best wool of the common sheep of the Western country.

Mr. Seth Adams died in 1852 at the advanced age of 84. It is not possible to trace sheep to his flock, with one possible exception, and none of them are found recorded in the "Register of the Ohio Spanish Merino Sheep Breeders' Association," but Mr. Adams is entitled to much credit, as no doubt the blood of his sheep was disseminated through many of the early flocks of southeastern Ohio, and still more widely in Kentucky and Tennessee by the addition of Humphreys and Jarvis blood. Not only did he introduce the first pair of Merino sheep into the United States that bred, but he was the first to carry them into Ohio, and thence into Kentucky and Tennessee.*

In 1802 Robert R. Livingston, United States minister to France, sent home to his estate on the Hudson two pairs of Merinos. Livingston was a prominent man in public affairs and an enthusiastic revolutionist. He was recorder of New York city for two years, member of the provincial assembly of New York, a delegate to the Continental Congress, and one of the committee to draft the Declaration of Independence. He was chancellor of the State of New York and administered to George Washington the oath of office as President of the United States. He was appointed minister to France in 1801; enjoyed the personal friendship of Napoleon, and was successful in accomplishing

* The exception is made upon this authority: "In 1809 Israel Putnam, of Marietta, Ohio, bought of Seth Adams some full-blooded Merinos, and founded a flock, which was continued by his son, L. J. P. Putnam, substantially to the present time, but without registration." "The American Merino; for wool and for mutton." By Stephen Powers, 1887.

the cession of Louisiana to the United States in 1803. He left France in 1805, and after his retirement from public service devoted much time to agriculture. He was connected with Robert Fulton in his efforts to navigate the waters by steam, and, after a life of varied usefulness, died at Clermont, on the Hudson, February 26, 1813. New York counts him one of her distinguished sons, and in the hall of statuary in the Capitol building at Washington has placed his statue in graceful and enduring bronze.

Writing in 1809, Chancellor Livingston said that the hope of acquiring such information in agriculture and the arts as would be useful to his fellow citizens, was not one of his smallest motives for accepting a foreign mission. Among other objects his attention was forcibly attracted to one then occupying the minds not only of the agriculturists, but the statesmen of Europe. It had long been the belief that the Merino sheep could only be raised advantageously in Spain, and that their yearly migration was necessary to the perfection of their wool. Under the influence of this opinion, the rest of Europe submitted to be tributaries of Spain for this precious commodity; and so slow was the progress of agricultural improvement that, though Mr. Alstroemer had naturalized them in Sweden eighty years before, in a country little congenial to their native habits, yet it was long before his successful experiments excited public attention. France, after some abortive attempts, succeeded so fully as to open the eyes of the neighboring nations. Livingston saw and admired her beautiful flocks; and the inquiries he had the means of making of intelligent men from different parts of Europe convinced him that, instead of degenerating, they had improved in every region to which they had been transported. Knowing the United States to be peculiarly adapted to short-wooled sheep, he was eager to put them in possession of this invaluable stock. He hoped to attain his object by selecting two pairs of the finest Merinos he could find and sending them to the United States under the care of one of his servants, believing that so small a shipment would not be noticed and intending to follow them by others. They arrived safely in the spring of 1802, "and were, I believe," said Livingston, "the first couples ever imported into the United States."

They were purchased from the French national flock at the veterinary school at Chalons, and on their arrival were treated exactly like his other sheep—fed on hay and had no shelter. They brought two lambs the first year, and three of them (he had let his brother have one of the rams) sheared 11 pounds of washed wool—nearly 3 pounds 12 ounces each. The next year the lambs came in January, were neglected, and died. In 1805 one of the ewes was sick and brought no lamb; the other dropped a ewe lamb; and the five fleeces (from the 3 old sheep and two shearlings) when washed weighed 18 pounds, besides the tags and waste wool, upwards of 3 pounds 8 ounces each.

Mr. Livingston made another importation of a single French ram in

1807 from the government flock at Rambouillet, and he says: "After my return from Italy, being no longer in office, I obtained permission to ship others that Mr. Chaptal allowed me to select out of the highest-bred flock in France." Mr. Randall says that he could not learn that the latter ever arrived in the country, and one of Livingston's political enemies, writing in 1810, says that Napoleon Bonaparte, the warm friend of Livingston, had specially detained these sheep after they had been put on board a public vessel. The fact is that these sheep, 11 or 12 in number, were put on board the *Hope* at Bordeaux, and as she was about to sail June 15, 1809, were seized and retained, but whether by special order or in pursuance of the general practice then in vogue of seizing everything, we can not say. One of these sheep had a fleece of 16 pounds.

Livingston was astonished, upon his return to New York in 1805, that the introduction of Merino sheep had excited so little attention, and although the legislature of Connecticut had noticed the patriotic efforts of Col. Humphreys, one of her citizens, none of his sheep had been sold in the State. He had also the mortification to find that, notwithstanding his injunctions, his own had been much less extended than he expected. Nor was it until nearly three years later that the Merinos attracted any special attention. Then, for causes hereafter to be stated, Livingston began to sell his rams for $150 apiece; for a choice one raised by himself, ten months old, he refused $1,000. Half-blood rams and ewes, bred from his Merino rams on common sheep, sold for $12 each. As before noted, Livingston crossed his own importation with the flock descended from Don Pedro, and he was a purchaser of Humphreys sheep and some of the Jarvis importations of 1810, and about the same time bought many Merinos that were purchased by Charles Henry Hall of the Duke de Infantado, at Cadiz, and shipped to the United States in the summer and fall of 1810.

In 1806 Livingston submitted to the Society of Useful Arts two essays on the subject of Merino sheep, which quickened the attention of intelligent farmers, and the legislature of New York stepped forward, legislated in favor of woolen manufactures, and in other ways encouraged the raising of Merino sheep. Many who had never given any attention now began to buy them, and those having common flocks improved them by crossing with the Merino.

Finding himself frequently called upon for information and being anxious to communicate all that his experience or inquiries had taught him upon the subject, as well as to keep alive the interest that he had excited in his fellow citizens, Livingston believed that both might be effected by the publication of a little volume which should in some sort combine information with amusement, and, taken in connection with what he had before written, serve as a kind of shepherds' manual, and point out to the rich and the poor farmer the easiest means of convert-

ing their flocks into Merinos, as well as the advantage that would accrue both to themselves and their country by the change.*

The result of this labor of love was his "Essay on Sheep," printed by the legislature of New York in 1809 and acknowledged as an American classic, from which subsequent writers on sheep husbandry have freely drawn.

Through his personal efforts the legislature of New York, on April 8, 1808, reciting its belief that the public interest would be greatly benefited by obtaining the Spanish Merino sheep, by reason of the fineness of its fleece, in improving the manufacture of woolen cloth as well as otherwise, therefore enacted that any person who should, before September 1, 1808, bring into any county of the State in which there shall be no full-blooded Merino ram at the time of passing the act, a full-blooded Merino ram and keep him in said county for the term of one year from September 1, 1808, shall receive a premium of $50. By the same act authority was given to towns to lay taxes on dogs and to use the proceeds for purchasing Merino lambs of whole or half blood for disposition among the townspeople; and in addition thereto they were authorized to use for the purchase of rams the moneys collected from licenses.

In 1807 Livingston published a statement of the shearing of a flock of his sheep, 6 full-bred Merino sheep, 24 three-fourths bred, 30 half-bred, and 17 common sheep of good quality. They were kept in one flock and treated alike in every respect. The full-bred were 2 rams and 4 ewes; one of the ewes died in February a-lambing; she was eight years old. Two ewes lambed in March, the other was a yearling and had not taken a ram. The 28th of May, 1807, the 5 sheep were shorn and gave 28¾ pounds of wool. They had not been washed, but as they were well littered in the fold and kept out, except at night, the wool was not so foul as common. The wool from the ewe that died weighed 4½ pounds. All this wool sold at 10 shillings per pound. The 24 three-quarter-bred sheep gave 106 pounds of wool, the 30 half-bred gave 139½ pounds, and the 17 common sheep gave 62½ pounds of unwashed fleeces. The wool of the three-quarter-bred and half-bred was sold at 5*s.* per pound, that of the common sheep at 2*s.* 6*d.*

Referring to the quality of wool given by the Merinos and the low price at which he sold the wool of the three-quarter-bred sheep, Livingston says:

> It will seem extraordinary that 5 Merinos should have given 28¾ pounds of wool, which is near 6 pounds, and would probably amount to about 4 pounds of washed wool per head. But it is to be considered that these were chosen with care out of a flock of 200 that were themselves an improved stock. For it is an undoubted fact that the Merinos of the National flock have greatly improved in France by care and attention; that they are larger and yield more wool (with the latter having deteriorated) than the Merinos of Spain. This is a very encouraging circumstance, and the

*Preface to Livingston's "Essay on Sheep."

rather as I can add from my own experience that the French Merinos improve here when well kept. * * * Though the wool of the fourth-bred sheep was only sold at 5*s.*, yet it was worth at least 8*s.*, since it was in most of the fleeces nearly as fine as that of the full-bred sheep.

The next sheep-shearing at Clermont, of which Livingston gives any record, was in 1809, with the following result given in tabular form:

Number of sheep.	Quantity of wool.	Average of each.	Price sold at.	Fleece per head.	Total.	Profit and loss, deducting $1.50 for keeping.
	Lbs. *Oz.*	*Lbs.* *Oz.*				
29 common	114 4	3 15	$0.37½	$1.47	$ 42.84	Loss on each fleece . $0.03
83 half-bred ewes	393 7	4 11	.75	3.53	295.07	Gain on each fleece . 2.03
47 half-bred wethers	236 4	5 6	.75	4.11	177.19	Gain on each fleece . 2.55
39 three-fourths-bred ewes	156 6	6 0	1.25	6.25	195.47	Gain on each fleece . 4.75
3 three-fourths-bred wethers	18 6	5 7	1.25	6.83	20.47	Gain on each fleece . 5.25
27 seven-eighths-bred ewes	139 0	5 2	1.50	7.69	208.50	Gain on each fleece . 6.81
7 full-bred ewes	36 0	5 2	2.00	10.25	72.00	Gain on each fleece . 8.75
FULL-BRED RAMS.						
Clermont, 14 months old	9 6	9 6	2.00	18.75	18.75	Gain on each fleece . 17.25
Rambouillet	9 0	9 0	2.00	18.00	18.00	Gain on each fleece . 16.50
Columbus and Hornless	12 14	6 7	2.00	12.85	25.70	Gain on each fleece . 11.35
					1,073.99	

All these sheep were shorn unwashed and the wool sold as it came from the sheep's back. The sheep were, however, kept as clean as possible, having been littered all winter and fed from racks. The tags and dirt were taken off before the wool was weighed.

Sheep weighed in order to ascertain the proportion between the wool and carcass.

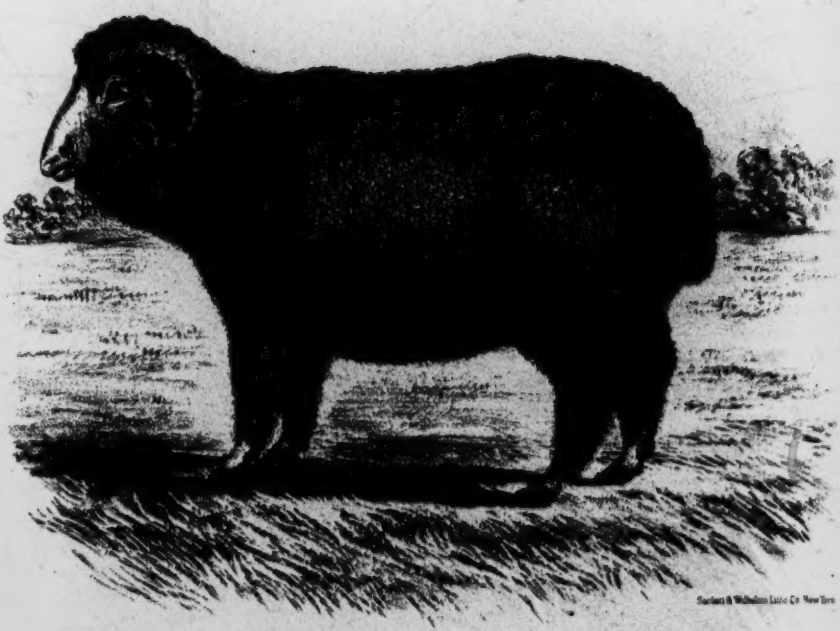
No. of sheep.	Weight of—	
	Carcass.	Fleece.
	Lbs. *Oz.*	*Lbs.* *Oz.*
5 common *	85 0	4 12
	69 0	2 12
	75 0	6 0
	98 0	4 0
	85 0	3 12
	412 0	21 4
Average	83 6	4 4
12 half and three-fourths blood ewes †	73 0	5 8
	60 0	6 4
	63 0	6 0
	64 0	5 0
	65 0	5 10
	68 0	5 8
	53 0	5 2
	59 0	7 8
	69 0	6 11
	69 0	5 0
	61 0	7 2
	52 0	5 8
	756 0	70 13
Average	63 0	5 14
Clermont, 14 months old	126 0	9 6
Rambouillet	140 0	9 0
Columbus	123 0	5 8
Hornless	122 0	7 6

* Proportion of wool to carcass, 1 to 20.
† Proportion of wool to carcass, 1 to 10¼.

CLERMONT.

DRAWN BY MRS. R. L. LIVINGSTON.

FROM "ESSAY ON SHEEP," BY ROB'T R. LIVINGSTON, LL.D., 1810.



RAMBOUILLET.

DRAWN BY MRS. R. L. LIVINGSTON.

FROM "ESSAY ON SHEEP," BY ROST. R. LIVINGSTON, LL.D., 1810.

Chancellor Livingston gave these figures to the public through Dr. Bard, president of the Agricultural Society of Dutchess County, N. Y., and commented upon them; built up an argument, in fact, why the farmers of the country should substitute the Merino for the common sheep. The average proportion of the Merino ewe fleeces to their weight being one to ten and a half, while that of the common ewes was one to twenty; and, the consumption of food in animals of the same species being in proportion to the carcass, it followed that 1 pound of common wool worth 3*s.* cost as much hay and grass as 2 pounds of wool from a three-quarter Merino, worth $2.50. It was observed that the proportion of wool to the carcass was not the same in the males as in the females, probably because of their great weight of bone and horns. Thus the tup Clermont weighed without his coat 126 pounds, his fleece 9 pounds 6 ounces. His wool, therefore, was to his carcass, when shorn, as one to twelve and a half. Rambouillet weighed 140 pounds, including his coat, and his fleece 9 pounds, the general average being, then, as one to fourteen, while in common wethers it was as one to twenty-seven. He found the weight of his Merino, or, rather, three-fourths blood wethers, to be about 128 pounds, the average of their wool to be about 5 pounds if well kept, which indicated that it was much less profitable to keep wethers than ewes.

From 1807 to 1810 this Clermont flock was increased to the number of 645 sheep from full to half blood and 310 of the best American ewes and half or three-fourths wethers.

At Livingston's sheep-shearing at Clermont, June 15 and 16, 1810, the following results were obtained:

Clermont stock rams—	Pounds.	Ounces.
Rambouillet	9	0
Clermont	9	0
Jason, a shearling	11	11
Hornless, an old ram	7	0

One hundred and ninety-six ewes were sheared and gave as follows:

	Fleeces.		
	Average weight.	Greatest weight.	Least weight.
	Lbs. Oz.	*Lbs. Oz.*	*Lbs. Oz.*
Full-bred ewes generally	5 13	8 12	3 7
Seven-eighths-bred ewes generally	5 6	8 4	3 0
Three-fourths-bred ewes generally	5 3	7 9	3 0
One-half-bred ewes generally	5 1	8 9	2 8

This table is noticeable in that it shows the progressive improvement of the flock, and that the quantity as well as the quality of the fleece increases with the purity of the blood. The fleece from Jason sold for $2 per pound, realizing over $23.

To the honorable Col. Barclay, of England, Livingston, under date

of July, 1810, gives the result of this shearing in more detail, which we quote:

The circumstances worthy of note in my sheep-shearing are the following: First, the general improvement of my flock since last year. The whole Merino and mixed sheep, when together, to wit, 200 ewes, gave an average of 6 ounces more than they did last year. The full-blood ewes gave an average of 11 ounces more without any difference in their keeping. This I attribute to an improvement in the stock, since there was no change in the old ewes, but the whole gain was upon the young ewes. Had half-blood ewes been withdrawn and the average taken only on the other half, it would have amounted to about 7 pounds, free from tags, though all these ewes had lambs, and I have no doubt, therefore, that when my number shall be sufficient to enable me to select my ewes as I have my rams, that I shall make the general average of the flock at least 7 pounds and greatly improve the quality of the fleeces.

Stock rams.	Weight.	Weight of fleece.	Remarks.
	Pounds.	*Lbs Oz.*	
One 6-year-old	146	9 0	Imported from Rambouillet.
One 2-year-old	146	9 0	Raised here.
One 1-year-old	145	11 11	Do.

Ewes.	Average weight of fleece.	Heaviest fleece.
	Lbs. Oz.	*Lbs. Oz.*
Common 268	3 10	.....
Half-blood, or first cross	5 1	7 0
Three-fourths, or second cross	5 3	8 0
Seven-eighths, or third cross	5 6	8 4
Full blood	5 13	8 12

Price at which the wool sold.

Half-blood, or first cross	$0.75
Three-fourths blood, or second cross	1.25
Seven-eighths blood, or third cross	1.50
Full blood	2.00

All sold unwashed. That your friends may see that we are not totally void of the spirit of enterprise in the United States, I subjoin the price at which my lambs sold:

4 full-bred ram lambs	$4,000
14 fifteen-sixteenths ram lambs	3,500
20 seven-eighths ram lambs	2,000
30 three-fourths ram lambs	900

These were all I chose to sell, as I am extending my own flock, and, therefore, parted with no ewes, and reserved nine full-blood rams for my own use. My half-bred lambs, having come late, were not yet exposed to sale; a few, however, have been since sold at $12.50 each. The ewe lambs of the low grades are considered as of twice the value of the rams. Had these lambs been a year old, so as to be fit for covering this season, they would have sold 50 per cent higher. Five hundred dollars was offered and refused for a fifteenth-sixteenths I sold last year at $125. My sheep-shearing was attended by upwards of 200 respectable gentlemen farmers from this and the neighboring States, and all the fleeces were weighed, as shorn, in their presence.

From the ardor which my countrymen manifest in this pursuit, I doubt not that

fine wool will be a great article of export from the Northern States, if the injustice and mad policy of the manufacturing nations of Europe do not compel us to work it up at home. I am, therefore, solicitous to hear at what price the several grades of wool herewith sent are valued in England. It is certain that none of the sheep which have been of late imported into the United States from Spain, of which there are many, bear any proportion to mine, either in weight or quality of the fleeces, besides being very inferior to them in the beauty of their forms, in which, indeed, none excel those of Rambouillet.

Of this shearing a contemporary account says: "It was highly gratifying to observe many of the gentlemen clothed in elegant suits of Merino wool." They sat down to an elegant, sumptuous dinner; plenty and conviviality diffused a smile over every countenance, and then it is presumed the sale began.

Many made selections from the stock, and it was observed that farmers who had never before listened to the reports in favor of the Merino breed were now convinced of their superior value, and immediately became purchasers, or gave orders for sheep to be delivered to them on a future day.

By these annual sales Livingston's Merinos were widely disseminated in the western counties of Massachusetts and Connecticut, and in the State of New York. In 1807 Elkanah Watson, a pioneer in the woolen manufacture, introduced into Berkshire County, Mass., since noted for its excellent cloth manufactures, the first pair of Merino sheep from the Livingston stock, and the sheep were shown by him at the fair at Pittsfield, October 1, 1810, one of the first agricultural fairs ever held in America. From the fleeces of these first sheep in 1808 William Schofield made a piece of blue cloth, superior to any yet made in the country. Samples were sent to different cities and accounts of it were published, with the cost of manufacture, and excited much interest throughout the country. He received at this time 50 to 60 cents per yard for weaving broadcloth. Mr. Watson calculated that there would be 1,500 full-blooded and mixed Merinos in Berkshire County in 1810, and incidentally remarked that Humphreys, of Connecticut, George Booth, of Dutchess County, N. Y., and George Upton, of Columbia, with others, were manufacturing cloths from Merino wool.

We have no means of knowing how near Mr. Watson came to the sheep census of Berkshire in 1810, but we find it recorded that in 1815, within 1 mile of Pittsfield, in that county, there were over 8,000 sheep, mostly Merinos, as follows:

Full-blood Merinos	435
Fifteen-sixteenths blood	388
Seven-eighths blood	898
Three-fourths blood	2,299
Five-eighths blood	170
One-half blood	3,048
One-fourth blood	388
Common sheep	852
Total	8,478

When Mr. Watson conjectured that there would be 1,500 Merino or fine-wooled sheep in Berkshire County by 1810, he did not allow full credit for his own efforts in that direction, for, in addition to the pair purchased of Livingston in 1807, he purchased full-bloods both of Livingston and Humphreys in 1808, and then in 1809 procured from Livingston six fine rams to go exclusively to his own flock, which he purposed to extend to 300 that winter, the greater part of which were selected ewes, exclusive of 50 of the mixed breed of different grades. With these means he had no doubt but in May, 1810, he would have, including outlying flocks cared for by farmers in the vicinity, 1,500 different grade Merinos, and that the spread of the Merino flocks would extend with such rapidity as to produce a proportionate increase of the woolen factories for fine cloths.

Livingston's ideas were quite as sanguine as those of Watson, in fact more so, and in September of this year (1809), when Watson was counting on the increase of 6 rams and 350 ewes, Livingston was penning to him a suggestion to rival the Southern States in the production of cotton by substituting the value of the cotton by Merino sheep and wool. The idea was a striking one, and thus set forth:

> Fourteen million pounds of cotton (the quantity exported by South Carolina and Georgia in one year) taking the short and long staple together, at the utmost, is not worth more than $5,000,000 at London market. New York and Massachusetts, either of them without any material change in their agriculture, except a substitute of Merino sheep for other sheep, can raise as much wool as shall equal in value the export of cotton. But how easy it would be, once at that point, to double all our Merino flocks, thus leaving a larger quantity of wool than we now have from the same number of sheep for domestic purposes, of fine wool instead of coarse, and all the surplus for exportation, or to go into future home manufacture.

It is unnecessary to say that these expectations never were reached, and for fifty years thereafter "cotton was king," and all the political power of the United States was exercised in its interest. It was, however, no unreasonable dream of Livingston's, for the Boston and New York City papers of the day noted with great interest the numerous articles in the interior papers announcing the wonderful increase of Merinos, and the fact that the wool did not deteriorate, and calling upon the farmers of their respective neighborhoods to care for and improve their breed of sheep.

Nor was Livingston alone in his sanguine calculations. A writer in the Boston Palladium was confident that, as the wars in Spain would ruin the wool industry of that country, the United States could and would fill the demand. He sets out to meet the objections which he had heard against the Merino sheep: (1) That the sheep would probably degenerate, and the wool, in process of time, become little or nothing superior to our own, either in quantity or quality; (2) that should that not be the case, yet as the wool increased in quantity the price would be reduced.

In answer to the first objection it was said that the Merinos were a distinct race and could not be reduced to the same kind, though when neglected they would become smaller, the wool shorter, less in quantity and not coarser; and Sweden, France, and Saxony were pointed to, and the fact was restated that in our own country the climate had been favorable to the fineness of the wool. To the second objection he opposed facts. Superfine broadcloths and some other articles could not be made without Merino wool. Great Britain usually imported 6,000,000 pounds of it annually from Spain. The Spanish war prevented this importation and Merino wool rose to $6 per pound. Importations being renewed wool fell to $3 per pound. Britain was supposed to have a stock on hand sufficient for two years; when this should have been expended, from whence could she be supplied? Although her land was excellent for tillage she purchased part of her grain; she could not, therefore, afford to make any considerable addition to her sheep.

The system of raising sheep in Spain was thought to be at an end, and as that country purchased the greater part of its grain, it ought not to be, and probably would not be, revived. The United States was the only country which afforded any prospect of a considerable supply. It was considered possible, without a doubt, in ten years to increase the stock of Merino sheep to 100,000, although it was presumed that it would not be done. One hundred thousand sheep would yield 500,000 pounds unwashed wool, and it was hoped that in ten years the United States would manufacture that amount themselves, but if they should not use a single pound, that would not be a twentieth part of what would be wanted by England alone. It could, therefore, be safely inferred that for a long period in the ordinary course of things the price of Merino wool would not be less than from $3 to $6 per pound.

An elaborate table was then presented to show the progress that might be made in raising Merino sheep in eight years. It supposed a man to begin with a Merino ram and 100 common sheep, and that he would rear annually 80 lambs, and that not wishing to enlarge his flock he would annually sell the increase—that is, 40 ram lambs and 40 of the most ordinary sheep—and that a lamb of the fourth generation was to be considered full-blooded, as sheep of the fourth generation propagated in this way may be said to have fifteen-sixteenths of Merino blood, and compared with full-blooded Merinos were superior both in their size and quantity of wool.

This table showed that at the end of eight years, from a single ram and 100 common ewes, without increasing his stock, a farmer could establish a full-blooded flock of 156 sheep, exclusive of 76 full-blooded sheep disposed of, beside 100 common blood, 144 one-half blood, 135 three-fourths blood, and 129 seven-eighths blood.

A contributor to the Alexandria Gazette made a more elaborate calculation, intending to show that if kept separate, allowing the number

of those that died to equal the extra number of twins, it would require fourteen or fifteen years for 1,500 rams and 1,500 ewes to increase to 1,000,000 full-blooded sheep, for supposing one-half the increase to be rams and one-half ewes they would each year only half double the number of the preceding year; but supposing 2,000 Merino rams in the country to be crossed on 160,000 common ewes, the conclusion was reached that in eight years there would be more millions of full-bred Merino than the whole country could feed and the common sheep would have entirely disappeared—an improvement which was not welcomed, for long wool was as much wanted as fine, and the old sheep were better for mutton.

But, as remarked, these speculative figures and conclusions were not reached in actual fact, though the Merino made rapid strides in some parts of the country.

In New York the increase was especially great. The introduction of the Merino wool, or even a small dash of it, into their flocks convinced the farmers that soft, warm, substantial clothes could be made at home, and this conviction nearly doubled the number of sheep in the State in the four years from 1806 to 1810. Looms multiplied and almost every farmer had a woman weaver. Everybody was increasing flocks and improving them. The Livingston Merino kept on improving also, and a half-bred ram that Livingston sold in 1808, weighed in 1810 190 pounds, and he had no doubt that he would rival Rambouillet in a few years, so rapid was the improvement of his flock. He did not live to see the realization of his hopes, dying in 1813 and leaving behind him a reputation as "one of the most intelligent, public-spirited, and useful friends of agriculture who belonged to the State."

The Livingston sheep were quite widely distributed before his death, They formed the basis of the woolen manufacture at Pittsfield, Mass., and for many mills in Dutchess County, New York, where common and superfine broadcloths were made which sold at a lower rate in 1811 than European cloth of the same fineness. As early as 1808 Livingston presented himself to his admiring friends in the city of New York clad entirely in a suit the wool of which was shorn from his own Merino sheep and manufactured into cloth in his own county of Dutchess, and estimated to be worth $7 a yard. Fine flocks in New Jersey had for their foundation rams and ewes from Clermont on the Hudson; Delaware had a strain of the blood in Dupont's stock; some notable amateur farmers in the vicinity of Philadelphia prided themselves on their possession; Gen. John Mason, of Analostan Island in the Potomac opposite Georgetown, had at least one ram if not more, and his near neighbor at Arlington, G. W. P. Custis, had a magnificent ram, "General Hamilton," presented him by Livingston in 1810, which he used to improve the wool of the noted Arlington long-wooled sheep. Gen. Wilkinson obtained a ram of Livingston in 1811 or 1812, which he carried to Mississippi Territory, and from which some fine Merino flocks were formed at that early date.

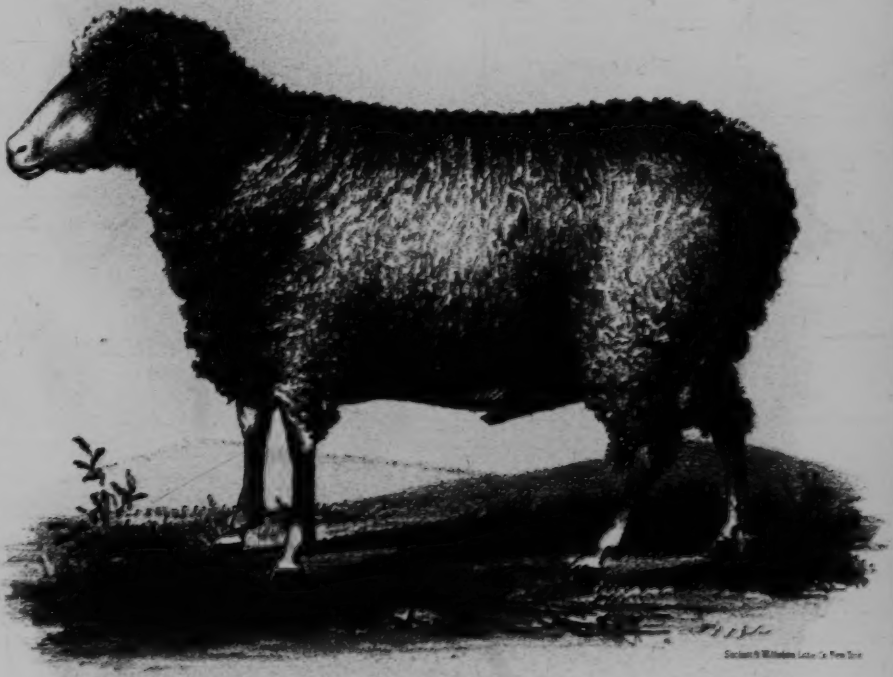
On September 13, 1813, a few months after Livingston's death, a part of his full blooded flock was sold at auction opposite St. Mark's church, New York city. The number sold was 20 rams and 120 ewes. The remainder of his flock was kept on the estate at Clermont as late as 1836, bearing the same characteristics as marked the original importation, and Nathan Beckwith, of Red Hook, was allowed to select a few rams and ewes to commence another pure flock.

Livingston thus describes the Spanish Merinos, as they appeared at the beginning of this century. The race varies greatly in size and beauty in different parts of Spain. It is commonly rather smaller than the middle-sized sheep of America. The body is compact, the legs short, the head long, the forehead arched. The ram generally (but not invariably) carries very large spiral horns, has a fine eye and a bold step. The ewes have generally no horns. The wool of these sheep is so much finer and softer than the common wool as to bear no sort of comparison with it; it is twisted and drawn together like a corkscrew; its length is generally 3 inches, but when drawn out it will stretch to nearly double that length. Though the wool is, when cleaned, extremely white, yet on the sheep it appears of a yellowish or dirty-brown color, owing to the closeness of the coat and the condensation of the perspiration on the extremities of the fleece. The wool commonly covers great part of the head, and descends to the hoof of the hind feet, particularly in young sheep; it is also much more greasy than the wool of other sheep.

The difference between the Merinos composing the national flocks of France, from which Livingston procured his sheep, and those imported from Spain into France a few years later, under the treaty of Basle (though these also were picked sheep), was so striking that it could hardly be attributed solely to the care and attention which they received in France, though much was doubtless due to this circumstance. Of the progenitors of Livingston's sheep, the Rambouillet flock, Prof. Gilbert reported to the National Institute of France in 1796 that the stock was composed of individuals beautiful beyond any that had ever before been brought from Spain; but having been chosen from a great number of flocks, in different parts of the Kingdom, they were distinguished by very striking local differences, which formed a medley disagreeable to the eye, but immaterial as it affected their quality. These characteristic differences were melted into each other by their successive alliances, and from thence resulted a race resembling none of those which composed the primitive stock, but which certainly did not yield in any respect to the most beautiful in point of size, form, and strength; or in the fineness, length, softness, strength, and abundance of the fleece. Almost all the fleeces of the rams of two years and upwards weighed from 12 to 13 French pounds, but the mean weight, taking rams and ewes together, was scant 8 pounds, after deducting the tags and belly wool. Making allowance for washing and scouring, the average

weight of the ram's fleece was about 6 American pounds, exclusive of tags and belly wool.

It was a favorite argument with those who first opposed the general introduction of the Spanish Merino that these sheep would degenerate and their wool change in the new country to which they had been transferred, an argument which Livingston combatted by the presentation of facts drawn from his own experience. While admitting the fact that most of the British sheep that had, from time to time, been brought into the country had deteriorated, he denied that any inference injurious to the Merino breed could be drawn from that. The British sheep were the long-wooled, for no others were thought better than our own. This race of sheep could only be advantageously maintained on rich and luxuriant pastures and an ample supply of succulent food during the winter. Experience taught that rich pastures would add to the length and quality of wool on our native sheep, and that bad keeping would diminish it. Without attention to this circumstance, the long-wooled sheep had been transferred from the fens and marshes of England and Holland to our dry, short, sweet pastures, from which it was expected that, laboring under a thick coat of long wool, and contending with our summer sun, they should be able to fill their large carcasses. Not having pastures adapted to their size and their habits, they could not subsist but by gradually accommodating themselves to ours. This necessarily occasioned a diminution, first in the quality of the wool, and next in the size of their descendants; besides that, it was very rare to obtain the full-bred sheep, both rams and ewes, and to preserve them unmixed. If the rams were bred with our ewes their progeny would soon be reduced to the size of the ewes; directly because of the mixture, and indirectly from the ewes not being able to afford nourishment to a larger stock than nature designed her to support, without the most uncommon care in feeding her while she gave milk. From which facts Livingston argued that it was always very injudicious to breed from the females of any stock of a race inferior in size to that of the sire, since they would in such case necessarily degenerate. The reverse would take place where the ewes were larger than the stock from which the rams came. The rams being abundantly nourished would, by degrees, attain the size of the dam, while they preserved the other peculiarities of the sire. It was by attention to this circumstance that Livingston by 1809 had already greatly improved his Merino stock in size and beauty, when he had bred them in the fourth generation from the finest ewes of the country; and where he bred them from imported ewes he attained the same object by affording them a plentiful supply of food while they nourished their young. As these imported Merino ewes were themselves of the largest stock of the Merinos, he had thus gradually added to the size of their progeny; and had full-bred Merinos at Clermont that were larger than the common sheep of the country, and his half and three quarters bred wethers were, when shorn of their



SPANISH MERINO RAM.

VERMONT SHEEP BREEDERS' REGISTER (IMPORTED AT BEGINNING OF PRESENT CENTURY).

fleeces, larger and much handsomer than most of the native American flocks.

So far as scarcity of food might operate a change for the worse in sheep, it could not apply to the Merino when introduced into our country; because, not requiring better pastures than our own sheep, there was no reason for the change of size, at least such change as the wool of the British sheep had undergone when introduced; this was a change in the quantity rather than in the quality. When a sheep diminished in size, it would have been a very unwise provision of nature to have suffered it to have carried the same quantity of wool which it had borne upon a larger and stronger carcass; its wool, therefore, diminished in length in the same manner that its carcass did in size; but the quality of the wool remained the same, or, if anything, changed for the better. So if the large and improved breed of Merinos were kept upon very scanty pastures, they would diminish in size and carry shorter fleeces; but those fleeces, even under the worst keeping, would still retain all their original properties. We are often told of the influence of climate in effecting changes; that it operates is believed though it operates very slowly, but until experience has determined the fact it is not always possible to say whether that operation be for the better or for the worse. Livingston believed and experience has confirmed the fact that the change in the Merino sheep taken into any northern country, provided they were plentifully fed, would be for the better, and particularly when brought into New York, where the pastures were good, the air and waters pure, the winters cold, and the summer range furnished with shade. The Merino differs essentially from all other sheep, and even from all other quadrupeds of which we have any knowledge, as an annual does from a perennial plant. All quadrupeds change their coats every year, and indeed generally twice a year; the Merino sheep never changes his coat; on the contrary it will continue to grow from year to year, and at the end of the third year the fleece will yield a three-year crop, with little or no diminution. This experiment has been tried in France, in Switzerland, and in England, for the course of three years successively, and always with the same result. The wool of this sheep then resembles in its duration human hair, and may probably be subject to the same physical laws. Human hair is affected by the tissue of the skin through which it passes. In warm climates the hair of man is generally black and coarse; in colder ones we find flaxen, yellow, and various shades of brown to be the prevalent colors; and even where the hair takes a deeper shade it is finer than the lank black hair of the South. May not this be owing in some sort to the skin being more braced in one and more lax in the other? And will it not produce the same effect upon the wool of an animal whose fleece is perennial, particularly if the food and air invigorate at the very time that the climate braces the fibers? It is said that the wool of the common sheep is sometimes coarser, as he is either well or ill fed. This may happen if

he is either sickly or in full health, or if the weather is more or less cold when the young wool protrudes through the skin; if in that state it is compressed it will be fine; if it finds an easy passage it will be coarse; and, as the wool of common sheep is an annual production, it may frequently vary. But the fleece which never falls off must be subject to very few changes; it may be longer or shorter, but the root being the same it will probably be liable to no changes but such as arise from the greater or less compression of the skin through which it passes. Cold, then, will have a tendency to render the wool fine, heat and moisture to make it coarse.

The marten, the gray squirrel, the common fox, etc., have much finer fur in Siberia and Hudson Bay than they have in Virginia or Pennsylvania, and yet they are exactly the same animal. We find an exact analogy between the effect of climate upon the covering of sheep and that of other quadrupeds. The sheep under the line are hairy; as you go north they become woolly, and further north the wool is finest; the best wool in Germany is that of Saxony. The moist climate of England and Ireland produces long and coarse wool. It is true that fine wool is also found in Persia, in Cashmere, and Thibet, but this is only in the very cold and mountainous parts of those countries. The sheep of Siberia are coarse-haired, but they have below that hair a coat of extremely fine wool; they are the Moufflon, or Argali, almost in their native state, in which man has taken little pains to cultivate the wool at the expense of the hair, but permitted them to grow together; and, indeed, in that state it is best adapted to the wants of the inhabitants, who know not the use of the loom, but wear the skin of the sheep, in which case the hair is as useful as the wool; for it protects them as it did its original owner against rain and snow, which would penetrate the wool were it not covered by a surtout of hair. It is then probable that the Merino sheep does not owe its peculiar excellence to the climate of Spain, or to the mode of treatment. Spain contains a great number of long-wooled sheep, in every respect different from the Merino; the climate has had no effect in meliorating their fleeces; the migration does not contribute to it. They have in various parts of Spain, and particularly in Estremadura, Merinos that never migrate, and whose wool is not inferior to that of the migratory sheep; and they have both in France and Italy migrating sheep whose wool is not fine.

To this condensed argument of Livingston for the value of the Merino and its proof against deterioration it may be stated that although his own sheep were only introduced in 1802 they had improved in seven years in size, beauty of form, and quantity and quality of the fleece. The first two improvements were too obvious to admit of the least doubt; the last required so nice a discrimination as to make the decision more difficult in all but one instance, where the difference was so striking as to be evident to every observer. This was the case of a ram lamb of 1808 out of an imported ewe, while his sire (also by the same dam) was

bred upon the Clermont farm. This lamb was of the most uncommon size and beauty; its fleece, compared with that of any other of his improved sheep, or with any sample that he had been able to obtain of others, was indisputably much finer, and at the same time so long and abundant as to leave but little doubt of a yield of 8 pounds of wool the first shearing. It actually yielded 9 pounds 6 ounces. The quality of the fleece was compared to that of Lord Somerville's, of England, which was finer from his Spanish Merino sheep than the wool brought from Spain into England. It required 2 pounds of imported Spanish wool to make 1 yard of the finest British broadcloth; from Lord Somerville's Spanish flock 1 pound 9 ounces made a yard. Applying the same mode of determination, Livingston's wool exceeded both the Spanish wool and the Anglo-Spanish wool, since the same quantity of cloth was made at Clermont by common country spinners and weavers from 1 pound 4 ounces of Clermont Merino wool; and 32½ yards of 25½ inches wide were made in Mr. Edward P. Livingston's family from 16¾ pounds of wool.

We have noted that on April 8, 1808, through Livingston's influence and efforts, the legislature of New York passed an act for the encouragement of raising and breeding Merino sheep. Two days before this it had loaned $5,000 to enable George Booth to "extend and promote a woolen manufactory" in the town of Poughkeepsie, and the same assistance was extended to other parties to establish cotton mills and to spin linen and hemp twine and yarn.

On the 8th of April, 1808, the legislature thought the public interest would be essentially promoted by the woolen manufactories in the State, and enacted that the person who should produce on or before the third Tuesday of February, 1809, the best specimen of woolen cloth of uniform texture and quality, not less than 200 yards, manufactured in the State, of a breadth not less than three-quarters of a yard, should be awarded a premium of $150; the next best specimen, not less than 150 yards, to have $75, and the next best 100 yards $50. It was also enacted that the person who should in his family manufacture within any county in the State the best specimen of woolen cloth, not less than 30 yards, and three-quarters wide, should receive $80. The Society for the Promotion of Arts was to make the awards, and the law was to remain in force three years.

This act was amended on April 5, 1810, by requiring that the wool used by the factories should be produced in the State, and that the cloth made in the family should be from wool grown in the county, and the judges of the county courts were to make the awards of the home products. The law was also extended to February, 1812.

On June 19, 1812, when the rapid increase of the woolen manufactures and the great improvement in that branch of national industry had fully and satisfactorily demonstrated its usefulness, the legislature considered it the part of wisdom that it be continued, and a new law was passed similar to the one of 1808, to continue in force three years.

The legislature did more than this. Under the favorable auspices of the State woolen factories had sprung up in various parts; some of them languished and struggled hard for existence, and the legislature loaned them money and otherwise assisted them. This legislation had the sympathy and support of Mr. Livingston.

It appears by a report of the State comptroller, made March 5, 1816, that the sums paid out in premiums under the law for the encouragement of the woolen manufacture were:

In 1809	$2,770	In 1813	$2,790
In 1810	3,490	In 1814	3,350
In 1811	4,095	In 1815	3,970

The law of 1812 expired by its own limitation at the end of 1815, and was not renewed. The council of the Society for the Promotion of Useful Arts reported through their chairman in 1815, that the liberal bounties granted by the State "in combination with other circumstances," had "contributed to raise, in many respects, the fine cloths of America to a degree of perfection equal to those manufactured in Europe."

In the same year with Chancellor Livingston's importation (1802) Col. David Humphreys, of Connecticut, United States minister to Spain, being about to return from that country after an official residence in it of seven years, secured a flock of 100 Merinos.

David Humphreys was born at Derby, Conn., July, 1752, graduated at Yale College in 1781; was for a time a teacher; entered the Revolutionary army as a captain, and in 1780 was appointed aid to Washington with the rank of lieutenant-colonel, which position he retained until the close of the war. He distinguished himself in the service, and when the army was disbanded accompanied Washington to Mount Vernon and remained a member of his family until 1784, when he was appointed secretary of legation to Thomas Jefferson, who was sent to negotiate treaties of amity and commerce with European powers. He was absent on this mission two years, residing chiefly in Paris and London. He served one year as colonel of a regiment in the western service, when, the regiment being disbanded, Washington invited him to Mount Vernon, where he resided until the formation of the Federal Government, when he accompanied Washington to New York and remained a member of his family until next year (1790), when he was appointed the first United States minister to Portugal, assuming the duties in 1791. He remained in Lisbon until 1797, when he was transferred to the court of Madrid as minister plenipotentiary, in which capacity he served until 1802. He was an elegant gentleman, with varied accomplishments as a soldier, a poet, a wit, and a man of the world; and his fondness for Spanish society rendered him a favorite at the Spanish court. The grandees, who owned the pure flocks of Spain, also resided at Madrid, and Col. Humphreys became personally

acquainted with a large number of them. His knowledge of Spanish flocks came from this class, who supplied him with information obtained from their head shepherds.

The importance of meliorating the breed of sheep in our country, particularly in the article of wool, had been early and deeply impressed upon his mind. In addition to the gradual process of improvement by bestowing more care and attention on the native flocks, in feeding them well and crossing the blood, obviously suggested by reason and experience, two modes occurred for hastening and insuring the attainment of that interesting object. The first, to introduce and propagate an entirely new race, if a more perfect one could be obtained; the second, to meliorate our stock by producing a mixed progeny from our ordinary ewes by rams of a better breed.

But before there could be sufficiently good reason for justifying the trouble and expense of transporting an adequate number, it was the part of wisdom to ascertain first whether the breed be superior in intrinsic value to those which already existed. And in that case, secondly, whether the race contemplated to be introduced was likely, when propagated, to retain all those qualities which constitute the original superiority of value? He founded his opinion in the affirmative of both questions, as applied to the Spanish Merino, by statements from respectable persons and from the examination and study of official reports. He knew from the statements of manufacturers and others that none of the superfine cloths made in England, France, and Holland could be fabricated without the mixture of a certain portion of Spanish wool, and that the price of the Merino wool was twice as high per pound as it was for ordinary kinds. He was given to understand that the Merinos were more easily maintained and fattened than the taller and larger breeds, and as to the flesh, he had frequent opportunities to decide for himself that it was not less succulent or well flavored than the best English or American mutton.

As to the second point, whether they would retain all their superior qualities when transported to America, the presumption was favorable, for official reports and many years of success had shown that in Great Britain, France, Holland, Switzerland, Germany, Denmark, and Sweden the fleeces of the descendants of the Merino taken from Spain had not diminished in fineness, and, in some places had increased in quantity. In all these countries they had supported well the cold and other variations of temperature, and the changed seasons and herbage. It was to him an ascertained fact, confirmed by experience beyond contradiction, that the quality of the wool did not depend on the quality of the pastures in Spain, because the same pastures had maintained, from time to time immemorial, two different breeds, which had never assimilated; one remarkable for the shortness and fineness, the other for the length and coarseness, of the wool. It was, moreover, equally well proved, that the quality did not depend on the journeys which the

greater part of the Merinos made annually, because there were other flocks of the same race which remained perpetually in the same districts whose fleeces were of the same consistency, precisely, as the others. Flocks that did travel and those that did not travel, which were nourished with plentiful food and taken good care of, by excluding the deformed, sick, and weak from becoming breeders, had been preserved in all the purity of the original stock; while those, in either predicament, migratory or resident, which were subjected to feel the effects of scarcity and negligence, invariably degenerated. Casualty or necessity, rather than foresight or reason, introduced the practice of entertaining migrating flocks. They multiplied as industry in cultivating the soil diminished. The nobles or rich individuals, who were the proprietors, found their advantage in them. The trouble and expense of keeping and nourishing was small. Accident was converted into system. Prescription gave a sanction to the proceeding, highways were obliged to be left wide, privileges were granted, and laws formed for the protection of this species of property, to the detriment of the community; for, by these means, agriculture was checked and crops circumscribed in limits. The vigilance of the shepherds, in remaining day and night with their charge, in reserving the best formed and finest wooled only for breeding, and in knowing and attending to each individual of their flocks, contributed much to preserve them from degeneration.

Col. Humphreys, being a public-spirited and wealthy man, intent upon doing a patriotic service to his country, sought to introduce these famed Spanish Merino sheep into the United States. There was a difficulty in the strictness of the laws that guarded these flocks, but relaxation was made in his favor, and the sheep, 100 in number, were shipped to Connecticut.

Col. Humphreys' own statement of this transaction was made to the Massachusetts Society for Promoting Agriculture, August 25, 1802:

Convinced that this race of sheep, of which, I believe, not one had been brought to the United States until the importation by myself, might be introduced with great benefit to our country, I contracted with a person, of the most respectable character, to deliver to me, at Lisbon, 100, composed of 25 rams and 75 ewes, from one to two years old. They were conducted, with proper passports, across the country of Portugal by three Spanish shepherds, and escorted by a small guard of Portuguese soldiers. On the 10th of April last (1802) they were embarked in the Tagus, on board the ship *Perseverance*, of 250 tons, Caleb Coggeshall master. In about fifty days 21 rams and 70 ewes were landed at Derby, Conn., they having been shifted at New York on board of a sloop destined to that river. The 9 which died were principally killed in consequence of bruises received by the violent rolling of the vessel on the Banks of Newfoundland. To prevent that and other disasters, as far as might be, by prudent precautions, the whole space between decks was divided into four pens of 25 sheep each, the rams having been kept separate in one, and the least vigorous ewes in another, with convenient racks, troughs, and tubs for feeding and watering them. The change from the open air to close confinement, and from green to dry food, occasioned them to suffer less inconvenience than I had apprehended. They ate more than a pound of English hay each, together with about a gill of Indian corn, or an equivalent of bran, with salt occasionally, and drank at the rate of nearly a quart of water a day.

This was double the ration which the Spanish shepherds calculated. * * * Some of the sheep appeared to have so voracious an appetite that it was deemed expedient to limit the quantity of forage, for fear of their injuring themselves. A few which would not eat Indian corn, probably because their teeth had become loose, were debarked very weak, and others much fatigued. All soon recovered, by being permitted to feed freely in hilly pastures in the day, and put under cover at night, until they could be gradually accustomed to remain altogether in the field without danger to their health. To habituate them to the climate I considered one of the most important operations. If a first experiment of a seasonable project fails of success, it leaves many more difficulties to be encountered and obstacles to be surmounted in all future essays of a similar kind than if the attempt had never been made.

For this importation, as before stated, Col. Humphreys received a gold medal with the inscription:

Presented by the Massachusetts Society for Promoting Agriculture to the Hon. David Humphreys, esq., late minister to the court of Madrid, as a testimony of respect for his patriotic exertions in importing into New England 100 of the Merino breed of sheep from Spain to improve the breed of that useful animal in his own country, 1802.

At the request of the Massachusetts society Col. Humphreys gave a statement of the circumstances surrounding this importation, and, after a description of the voyage just quoted, proceeds at some length with an argument for their propagation in the United States, which follows in part and which was printed quite generally in the newspapers of the day:

In the Eastern and Middle States all the circumstances encourage practical farmers to increase and improve their breed of sheep. All kinds of soil except marshy, and of air except humid, are friendly to it. This breed, like most or all others, thrive best in uplands and short pastures, but it is reputed to be so singularly hardy as to endure rain, snow, and cold as well as any northern race, and to support itself in parched southern climates by feeding on weeds and vegetables which most others would not taste. Without entering into the detail of enriching the land on which they graze or are folded, by their manure, especially where a rotation of crops is systematically pursued, I should not omit to mention it has been asserted that a moderate-sized farm, for example 100 acres, skillfully manured, may be made to maintain 100 sheep and, moreover, to produce as much in crops as it would have done had it been employed only in cultivation and not charged with their nourishment. For accomplishing this it would undoubtedly be indispensable to have a competent share of knowledge of animal and vegetable nature. From all the inquiries which I have been able to make since my return to America I have been extremely mortified to find that the breeding of sheep has been much neglected for some time past. It is but too evident a vital impulse is wanted to give new vigor to it, and I can not but regret that it is not permitted, in the compass of a letter, to dwell more at large on the means as well as to offer, in a more alluring manner, the motives for restoring that valuable race of animals, which seems to have been bestowed by Heaven more peculiarly for the use and comfort of man than any other, from its present state of decadence. If the limits would allow it to be done, it is believed the discussion would produce proof, approaching to demonstration, that no other branch of farming could be carried on in the Eastern and Middle States with so much advantage to the public or profit to the individuals concerned as the raising of sheep. The soil and climate being favorable, the quantity of nutriment and number of stock might be rapidly increased with a little exertion, even to such a degree as to furnish, in a few years, a great proportion of the wool necessary for our clothing. The process is easy and sure and does not require an uncommon share of

skill and intelligence. Some general instruction, together with patience and perseverence, are alone requisite. The sheep of which I treat, in common with those long since familiarized to our seasons, are rarely liable to diseases or accidents when proper care is taken of them.

Under the influence of such impressions, I thought I could not perform a more essential service to my country than to endeavor to impress on the minds of my compatriots a conviction that the New England and neighboring States are singularly well calculated for raising and maintaining as valuable a race of sheep as any in the world, without incurring any risk of their growing worse. More southern climates, though equally inhabited and cultivated, might not be equally suitable for this object on account of the immoderate heat. The wool of the best English sheep, in some parts of the West Indies, is soon converted to a kind of hair. In the new-settled districts of our northern and western Territories wolves must for some time be a formidable enemy. On the contrary, in the before-mentioned States, not only the exemption from the beasts and men accustomed to commit depredations on unguarded fields and folds in some other places, but likewise the method of making inclosures, so that the sheep may easily have a change of pastures in the summer, and the mode of tilling the earth so that an abundance of grasses and roots may be produced for a winter supply, appear to invite the husbandman to pay the most particular attention to this most useful and profitable branch of business. No other cattle will multiply so fast or with so little cost. The facility and certainty of making vast improvements in a very few years, provided a patriotic and persevering spirit should prevail, on account of the short period in which sheep of all descriptions arrive at maturity, is therefore a consideration which ought not to be overlooked or slighted. Although we have no national or public farms as in France, or grounds belonging to great and rich personages as in England, which are destined to essays in breeding sheep and cattle, or to experiments in useful branches of agriculture, yet we can have recourse to the results of their experience in the statements which are published, and I believe we have fewer prejudices to contend with in introducing improvements than the cultivators of any other country. We should, however, be cautious in varying the practice in conformity to the difference of local circumstances. We have a less number of hands for labor, and a greater extent of soil to be cultivated than most of the nations from which we can receive information or examples. This, however, it is conceived, would not be unfavorable to the particular kind of improvement in contemplation.

To make the meliorating experiments with the Merinos which I imported as complete as might be at the commencement, I have resolved to keep all the ewes together on the same farm, in order that they may be properly taken care of, and that their descendants may retain the original blood entire, until there shall be a sufficient increase for dispensing and continuing the pure race by breeding separately from them. I have concluded, in the mean time, to dispose of such proportion of the rams as can be spared, to respectable farmers, whose names will be published hereafter, and whose characters will be a pledge that a fair opportunity shall be afforded of producing an improved race by them and American ewes. That rams have been let for the season in England for from 200 to 1,000 guineas each, is a fact sufficiently known to those who are acquainted with the history of agricultural proceedings in that country, and demonstrates conclusively the wonderful passion which prevails for bettering the breed. * * * Several intelligent authors in Europe, who have treated of the more speedy and efficacious modes of improving wool, have stated that, where the smallness of the original stock of Merinos prevents so rapid a propagation of the pure race as could be wished, a mixed breed may be produced by Spanish rams and well-chosen ewes of the country, whose descendants in the fourth or fifth generation will yield fleeces nearly or quite as fine as the first quality of those which are produced in Spain. In France the existing government is paying the most zealous attention to this subject, with the hope of augmenting the quantity

of fine wool so much as to supersede the necessity of importations for their manufactures. The importance of an internal supply of the first articles of necessity appears to be more understood and acknowledged every day by every civilized nation in the world. It may be asked, How long are we to continue thus like colonies dependent on a mother country? And will a period never arrive when it will be indispensable to clothe ourselves principally with our own productions and fabrics?

It is true in the New England and neighboring States much has been done in families towards providing and preparing their own clothing. No real patriot can behold without feeling unusual emotions of pleasure the employment of the wool cards, the spinning-wheel, and the domestic looms in those nurseries of manufactures. From the manner in which this portion of the country is filled with inhabitants, and the habits of occupation which they acquire from their infancy, I shall not perhaps be too bold in predicting that they will soon make a progress which will surpass all calculation hitherto formed. We have the materials and dispositions. Destitute of the great sources of riches which, as it were, inundate our brethren in the South, on industry and economy in farming, fishing, navigating, and manufacturing, must we, in this part of the Union, depend under Providence for our prosperity. Whoever, then, can add occasions and motives for the practice of industry and economy can not fail to be a benefactor. And need any of our farmers despair of being able to produce two fleeces of wool where only one was produced? The more unequal division of landed property in the Southern States, and the greater profits to be derived from the rich crops of wheat, rice, tobacco, and cotton will naturally tend, for some time at least, to retard the manufacturing business; yet I am happy to learn that in the interior districts of those States many excellent articles of clothing are fabricated in the household way.

Mr. Livingston has been quoted in his description of the Merino sheep as he saw them, and we quote the appearance of the same breed as Col. Humphreys saw them, remarking that they were described in 1803, and, presumably, under his eye on his farm in Connecticut. The description may be taken as that of the Humphreys flock:

The height of the male is about the same as that of the ordinary breed in this country; the head appears rather bigger and straighter; the ears are very small; the eyes remarkably bright; the horns curved in a spiral turn; the neck short; the chest broad; the members more compact and thick than those of our former breed of sheep, and the carcass is thought to have smaller bones, and to be more rounded in the hinder part; the body, face, and legs are covered with a delicate fleece, which grows amazingly thick, without any mixture of coarser locks or hairs; the fleece is remarked to be much more impregnated than that of any other breed, with an oily substance, apparently exuded in perspiration. This animal is perfectly gentle, but quick, firm, and regular in all his movements. The female is considered, generally, as having the more characteristics of the pure blood, in proportion as she approximates to this description, yet the ewes are commonly destitute of horns, as is the case with those of my little flock. That flock, consisting of 21 rams and 70 ewes, has probably seldom, if ever, been surpassed by any extracted from the southern peninsula of Europe for the fine, soft, silky, strong, supple, and elastic qualities of the wool.*

Mr. Henry S. Randall says that he was placed in possession of several letters of Col. Humphreys, specially on the subject of sheep, addressed to different correspondents, and not one of them mentioned or alluded to the subject of the cabañas from which his Merinos were selected, but that in one communication he thought it worthy of state-

* Miscellaneous works of David Humphreys.

ment that a ram, raised on his farm, yielded 7 pounds 5 ounces of washed wool. Dr. James Mease, of Philadelphia, published a description of a Humphreys ram owned by Mr. Bulkley in 1807. This ram was very small, very fine, and produced but 4 pounds of washed wool. His length of staple was somewhat less than that of Chancellor Livingston's rams. He was extremely gentle and strongly marked with the carnation hue of skin; had spiral horns and brownness of fleece surface, all of which qualities he faithfully transmitted to his progeny in their usual proportions. The brownness of fleece penetrated to some depth from the surface. His lambs, when they came, were covered with coarse hairs, to the great suspicion of their paternity, until it was found this hair dropped off, and that his subsequent crops of lambs exhibited the same peculiarity. Referring to this description of Mr. Bulkley's ram Mr. Randall says, in 1861:

> Here we have a distinct hint of Paular or Infantado characteristics, yet Col. Humphreys' sheep could scarcely have been Paulars without some one alluding to their throatiness—a point which then attracted peculiar notice, both because it was unusual and regarded as unsightly. Besides, the sheep we now have among us, which can trace a clear descent from Col. Humphreys' flock, are not marked by this peculiarity unless it has been bred on them within the last fifteen or twenty years (1845 to 1861). It can hardly be presumed that the American ambassador would have been placed by his Spanish acquaintances in the hands of an agent who would have purchased from an obscure flock, or one not among the first. I do not build up a hypothesis on the single fact above given; it is only one among a number of scattering hints and circumstances which have led me to the opinion that the sheep were from the cabaña of the Duke of Infantado. One thing is certain, no such ram as Mr. Bulkley's could have been of Escurial blood, and the darkest and yolkiest sheep bred in the United States (Mr. Stephen Atwood's family), which trace directly to sheep bred by Col. Humphreys, can not be descended from the whitest and driest fleeced sheep of Spain.

Hon. William Jarvis, to whom reference will soon be made, states that these sheep of Col. Humphreys were pure-blood Transhumantes, and narrates how Humphreys secured them. It was a custom of the Spanish court, when a foreign minister was recalled, to present him a few bars of gold, but as the law of the United States forbade any minister taking a present from a foreign court Humphreys declined it, but suggested to the minister that it would gratify him could a royal license be given him to take out of the kingdom 200 Merino sheep. This the minister stated could not be granted, but intimated that if he wished to take them out no obstruction should be thrown in his way. These were purchased in Lower Leon, or Upper Estremadura, and driven down the valley of the Mondego to Figuerra, where they were embarked for the United States. Mr. Jarvis says he never could learn out of what cabaña these sheep were obtained, but that they were "unquestionably pure-blood transhumantes, which is the only fact of importance worth knowing."

In an instrument of writing given by Col. Humphreys, July 8, 1812, he says:

To all concerned to whom these presents shall come: I hereby certify and make known that the flock of Merinos belonging to me, and intrusted this day to the care of Mr. Elihu Ives, to be disposed of for my account at his best discretion, consisting of full and high degree of mixed bloods, are the genuine descendants and offsprings of those pure bloods extracted by me from Spanish Estremadura, in the beginning of the year 1802, and ascertained by their pedigree to be of the purest and best race in Spain. I, moreover, declare that it has been proved by the best of experience in almost every part of the United States, that they have not in any respect degenerated, but on the contrary, that the breed of whole-bloods, has, in some points, much improved in this country.

It is now generally admitted that Col. Humphreys' Merinos were from a single family and had that sameness in appearance and character which indicates sameness of blood, and that, spontaneously and without weeding out, they transmitted this sameness both to their immediate and last descendants, a thing they could not possibly have done had they been drawn from several cabañas. Every Spaniard at that day who had any connection with sheep considered it improper to mix the different great families or cabañas. It was contrary to the settled traditions of the country. Col. Humphreys up to that time had had little or no experience with sheep, and it was natural that he should adopt without question the views of people of whom he had made his purchases. There is no evidence that he entertained the remotest idea of improving or changing the style of the Spanish sheep, or of deviating from the Spanish ideas of breeding in-and-in.

It is the general opinion, too, that the Humphreys sheep were Infantadoes, though some have dissented, and an eminent Ohio breeder in a paper published in the Ohio Agricultural Report for 1854, advanced the idea that they were Escurials. The Escurial flock had been given by the crown to the Hieronimite monks, and the nearest line from their monastery at the Escurial Palace to the seacoast is by the valley of the Mondego across Portugal, the very route by which the Humphreys sheep were driven. Besides which, they were recognized by those who professed to have seen them and who were acquainted with the Escurial sheep as resembling them and the engraved portraits of them.

Col. Humphreys took a just pride in his success in establishing the Merino breed in this country, and in 1807 addressed two communications to the Society for Promoting Agriculture in the State of Massachusetts, giving some of the results of his experiments and congratulating both the manufacturer and the farmer on the value of the sheep for wool and mutton. The first letter is dated Boston, November 28, 1807, and reads:

More than five years having now elapsed since the introduction into New England of the flock of Merino sheep, in consequence of which the Society for Promoting Agriculture in the State of Massachusetts were pleased to present to me a gold medal, it will doubtless be acceptable to that respectable and patriotic body to learn that

their hopes and expectations concerning the utility of this interesting species of animals have not been disappointed. The attempt to propagate the pure Merinos in this country has been attended with complete success. The extent of the experiment insures the duration of the unadulterated breed. Instead of degenerating in the quantity or quality of their fleeces, the identical sheep which I brought to this country yield, on an average, half a pound more of wool apiece than they did at the first shearing after their arrival. Nor, on the nicest and most candid examination, is it found that there is any finer wool produced in Spain than that which is annually shorn from these same imported Merinos and their full-blooded offspring. The rams born in America are, however, generally preferred to those born in Spain, by persons who now make application to my agent for Merino rams to cross the blood of their flocks in breeding from them by American ewes. It is the opinion of all farmers in Connecticut who have been acquainted with the original flock and its descendants, both of the pure and mingled blood, that they are hardier, better adapted to our climate, and more easily nourished, both in summer and winter, than the common breed of American sheep. They are likewise remarkable for being more gregarious and less disposed to stray or get over fences than the others. Finally, it may truly be asserted that they preserve the entire character, features, and qualities of the best Merinos in Spain.

The mixture of the Spanish with the American blood has succeeded in ameliorating the pile of the fleece beyond my most sanguine expectations. As a proof of the superior value of the wool of the half-blood Merinos, it is a well-known truth that it has been sold for a dollar a pound in Connecticut, and still dearer in New York, the present season, while the best common wool has been sold for about half that price. The half-blooded Merinos produce more wool than the common sheep, and they ordinarily attain a larger size than the Spanish or American breed, from which they are descended. The facts here stated agree in substance with those established by experience in every country of Europe in which I have traveled, where this breed of sheep has been introduced. In England and France the greatest care and expense are now bestowed under royal and imperial protection for its extensive propagation.

A difficulty was experienced at first in carding the wool by the common carding machines. This has been overcome.

Some farmers, who early introduced a mixture of this blood into their flocks, have made in domestic manufacture, for sale, five or six pieces of cloth from this wool during the present year. I shall have several hundred yards, fabricated entirely by machinery from pure Merino fleeces. Several thousands, made by the same process, from the common sheep's wool of the country, have already been sent to market. Samples of both kinds, with the prices, are inclosed.

How long a period must pass before the prejudice against the fabrics of our country can be extinguished is not for me to decide. If any suitable means for their extinction could be devised and adopted, perhaps an essential service would be thereby rendered to the real prosperity and independence of the United States.

The second letter is dated Factory (Renomon Falls), Derby, December 10, 1807:

The importance of rightly understanding the best means of multiplying and improving the fine-wooled breed of sheep, derived from a cross of the pure Merino blood with that of the common flocks of the country, must be my apology for offering a few observations in addition to those which I had the honor of communicating to your agricultural society on the 28th of last month.

To facilitate the extension of this improved breed, and to confirm its superior excellence in point of wool, it is conceived, are objects which have a peculiar claim to the public attention.

A mixed breed being first produced from our finest wooled ewes by full-blooded Merino rams, it is still desirable that the Spanish blood should be renewed for three

or four generations, through the medium of sires of that race. Then the system of *breeding in-and-in*, as it is technically called, and as it has been ably explained by Dr. Parry, of Bath, in his late "essay on the nature, produce, origin, and extension of the Merino breed of sheep," proves decisive for the accomplishment of the objects proposed, in the shortest time, at the smallest expense, and with the greatest certainty of any other plan hitherto suggested.

It is judged by the farmers in this neighborhood, who are best acquainted with this confirmed mixed breed, that, aside of their superior excellence with respect to wool, they have a greater tendency to fatten on the same keeping than any other sheep within the compass of their knowledge. Although this disposition to fatten is of little consequence so long as they are bred for the fleece only, yet it may be well that those farmers who may hereafter propagate them for the sake of the carcass should not be ignorant of the fact.

From my further inquiries with regard to the weight of the fleeces of my Merinos, I learn that they have increased somewhat more than I stated in my letter of the 28th of last month. One of the rams born here has produced this season 7 pounds and 5 ounces of washed wool. This wool would, it is presumed, be worth $1.50 per pound in England. I have the united testimony of all the people engaged in or acquainted with its fabrication into cloth to prove that it has not deteriorated, by reason of inclosing four more specimens of cloth. Nos. 1, 2, and 3 were made from the wool of the pure Merinos, and No. 4 from that of the half-blooded race.

In a preceding chapter we have noticed the various acts of Connecticut during its colonial period for the care and protection of sheep. Attempts had been made since about 1736 to introduce woolen manufactures as a development of sheep raising, and these were revived after the Revolution. With help from the general assembly, a manufactory of woolens was established at Hartford after the peace. Its product was mainly of the pepper-and-salt variety, but it was good and popular, and a suit of the factory broadcloth was worn by Washington at the opening of Congress, 1790.* Laws were passed in 1786 for encouraging the raising of sheep by exempting from taxation at the rate of 4*s*. per head all sheep from which at the time a fleece was taken, and twenty were exempt from any execution or process for debt, laws which remained in force until 1798, when, instead of twenty sheep being exempt from process, ten sheep and one cow were so exempt. A long step in progress was taken in 1802, when Humphreys brought his Merinos into the State, and woolen manufactures have grown and flourished and made their influence felt in national politics. In 1803, to protect and preserve the purity of the Merino breed, the legislature enacted that any person allowing a ram to go at large or be out of his inclosure between September 1 and December 1 should pay $2 to any person taking up said ram. In 1814 the time was lengthened from August 1 to December 1.

In October, 1808, Elizur Goodrich, chairman of a committee of the Connecticut general assembly, made a report to that body commending Col. Humphreys for his patriotic exertions in importing the Merino sheep, and suggesting "a public testimony of the respect of his native State." The committee were also of the opinion that public encour-

* History of Connecticut. Alexander Johnston.

agement was due to the various important manufactures carried on in his establishment, and such encouragement was given by exempting "his superintendents, foremen, and apprentices, in these branches of manufacture, from the poll tax and assessments, from military duty, and working at highways, and his cotton and woolen establishment from taxes and assessments for the term of ten years."

The committee also thought it their duty to report that they had proof that the race of Merino sheep was inferior to none in the value of the carcass, or in the facility of management. They were healthful and fattened easily in our climate. The superior excellence of their wool was fully attested by comparison and an attentive examination of the fabrics wrought from the fleeces grown in the country.

Indeed, the well-known fact that the wool of the Merino breed has been for a long time considered by artists and manufacturers throughout Europe as indispensable to the construction of the finer woolen fabrics is in itself, in the opinion of the committee, incontestible evidence of its superior fineness.

The evidence laid before the committee left no doubt that the wool of the Merino had not deteriorated. Gentlemen of the first intelligence and integrity had attentively watched the progressive state of Col. Humphreys' imported flock, and concurred in attesting to the facts that the wool of the original stock retained all its superior value in quality and quantity, and that the full-blooded progeny produced in this country was in no respect inferior to the stock imported from Spain. In view of these facts a general suggestion was made of the importance of meliorating the common breed of sheep, particularly in the article of wool, by embracing the opportunities offered by Humphreys' flock of crossing the blood and producing a mixed progeny, as also of preserving and extending the full-blooded breed to an unlimited degree.

James Madison was inaugurated President of the United States on the 4th of March, 1809, "in a full suit of cloth of American manufacture, of the wool of Merinos raised in this country, his coat from the manufactory of Col. Humphreys, and his waistcoat and smallclothes from that of Chancellor Livingston," presents, respectively, from those gentlemen, whose zeal in the production of domestic woolens had received fresh impulse and has found several imitators since the late restrictions on the importation of British cloths. On the 10th of May following, an agricultural fair was held in Georgetown, D. C., on which occasion nearly all the gentlemen present wore clothing of domestic manufacture. President Madison sported his inauguration suit, the coat made from Merino wool of Col. Humphreys' flock, and the waistcoat and smallclothes made from the wool of the Livingston flock at Clermont. At the same fair "two Merino rams were exhibited, sired by 'Don Pedro,' owned by Mr. Dupont, of Wilmington."

There was thus represented at this fair, either by cloth made from the wool or by live animals, three importations made by Dupont, Livingston, and Humphreys seven or eight years before, which, with the

importation made by Mr. Adams in 1801, gave evidence that the four importations made in 1801 and 1802 had been preserved, made useful in improving the sheep and wool of the country, had become such favorites as to command prices varying from $1,000 to $1,500 each, and laid the foundation for fine-wooled manufactures.*

Evidence is ample and convincing that the sheep imported by Col. Humphreys were rapidly and widely disseminated, and made great improvements in the flocks of the States where they were taken; that those improvements began early, and in some cases, have been progressive to the present day. They became the foundation in great part of large flocks in New England, New York, New Jersey, Pennsylvania, and Ohio. Seth Adams, as has been noted, acted as Humphreys' agent, and in 1810 sold some of his sheep into Kentucky and Tennessee. About 1808 or 1809 Thomas Rotch, a Quaker, of Connecticut, moved to Stark County, Ohio, taking with him a small flock of Merino sheep. They were good, and a part of them were said to be descendants of the original flock brought over from Spain in 1802 by Col. Humphreys. In 1809 William R. Dickinson bought three of these sheep (said to have been of the original importation), and it is claimed that these were "closely guarded, separately marked, and continually bred within the importation of 1802 or their descendants" by Mr. Dickinson. The Dickinson Merino claims its origin from the sheep thus carefully guarded, and the Black-Top Spanish Merino also claims its origin from the Dickinson flock, through a purchase made by William Berry, of Washington County, Pa., in 1821. Mr. Berry purchased of Mr. Dickinson one choice ram and a few ewes, and placed them on his farm, and from that purchase, by good breeding and care, have descended many valuable flocks that shall claim attention in future pages.

Some of Humphreys' sheep are early traceable south of the Potomac. On April 30, 1807, at the Arlington sheep shearing, John Scott, of Strawberry Vale, Fairfax County, Va., received a premium for a "very fine lamb bred from a Spanish sheep imported from the mountains of Andalusia." He was an Humphreys sheep with a fine and beautiful fleece weighing 6¾ pounds. At the shearing at the same place April 30, 1809, two sheep described as tup lambs were shown:

Marquis Romana, property of William F. Grimes, Eagle's Nest, county of King George, weighed on the hoof 128 pounds; fleece weighed 7 pounds 4 ounces.

Cavallos, property of A. B. Hooe, Barnsfield, county of King George, weighed on the hoof 96 pounds; fleece weighed 7 pounds 14 ounces.

On May 15, 1811, Gen. John Mason, of Analostan Island, in the Potomac, opposite Georgetown, received from the fair of the Columbia Agricultural Society the first premium for the "best two-toothed ram lamb

* In a letter written to Consul Jarvis by Messrs. Cornelius Coolidge & Co., of Boston, they speak of Col. Humphreys repurchasing for $1,000 one which he had sold and of his selling two pairs for $6,000.

of the fine-wooled breed for his seven-eighths blooded Merino ram, Potomac Chief, of the breed of Col. Humphreys' flock." Potomac Chief weighed 103 pounds and his fleece 63¾ pounds, unwashed. Previous to this Gen. Mason is known to have had descendants of Don Pedro; also a Livingston ram, and but a short time before had imported from Cadiz, Spain, a flock of Infantados, to which reference will be made in subsequent pages. In the following year (1812), at this fair, William Marbury, of Georgetown, received a premium of $40 for his half-blooded Merino ram of Col. Humphreys' stock, crossed on the North Friesland breed. The carcass of this ram weighed 157 pounds 8 ounces; its fleece 11 pounds 14 ounces.

The Agricultural Society of South Carolina having demonstrated the success of mixing fine wool with cotton, it was suggested that attempts be made to manufacture cloth at home instead of sending the material north, and to improve the breed of sheep. Henry Izard, in May, 1808, bought of Dr. James Mease, of Philadelphia, a Merino ram from the Humphreys stock bred by him. This was the first Merino taken into South Carolina, and the event was hailed with great satisfaction as adding greatly to the resources of the State and as deserving the attention of the planters, for "cotton mixes admirably with wool."

In 1806 Col. Humphreys sold one ram and two ewes, full-blooded, to James Caldwell for $300, and Caldwell took them to his farm near Haddonfield, N. J. The ram soon died and the ewes were bred to a Spanish ram imported from Hesse-Cassel, and of which more hereafter. Thomas Bulkley, living near Philadelphia, was a purchaser of Humphreys sheep and bred them. In February, 1807, he advertised rams and ewes for sale of this Spanish breed. In August, 1808, James Wadsworth, of Geneseo, N. Y., purchased for $1,000 a full-blooded ram of Col. Humphreys, which, when taken through western New York, with other sheep, created considerable interest among the farmers. About the same time Aaron Cleveland carried a Humphreys half-blooded Merino ram into Washington County, N. Y. At the first show of the Pennsylvania society for the improvement of the breeds of cattle, held at Philadelphia, July 18, 1809, several rams and ewes of Humphreys' three-fourths and seven-eighths blood, were shown, and at the same place, April 3, 1810, Col. Humphreys showed eight or ten one-half, three-fourths, and seven-eighths blood Merino rams, and the notice given by the live-stock reporter of that day indicates that they were slow of sale: "These precious animals, which have been on sale for some months near the city, bear strong marks of the blood, and it is to be regretted that they will be forever lost to Pennsylvania, as they are on their way to the westward, where their value will no doubt be appreciated. Their prices are considerably enhanced since last year." At the same time there were shown two plates of hats, one made with 6 ounces of half-blood Merino wool, the other with 3 ounces Merino, 1

ounce raccoon, and 2 ounces rabbit. Both worked up very well. The Merino wool was from Humphreys' half-bloods.

Early in March, 1810, Col. Humphreys sold 2 rams and 2 ewes for $6,000,* and a few weeks later the statement was made that he had sold 4 rams for $6,000, to be taken to Kentucky. Whether these two notices referred to the same sale can not now be determined. About this time, however, the Humphreys sheep were taken into Kentucky. A letter from Lexington, in that State, July 31, 1810, says:

> A flock, consisting of 85 Merino sheep from Col. Humphreys' stock, arrived this week at the farm of Col. James Trotter, near this town. Part are full-blooded, and part are from different crosses of our own breed, and from the high reputation of Col. Humphreys there can be no doubt but they are as represented.

Whether this was part of the flock of 176 that reached Marietta, Ohio, on the 9th of that month, in charge of Seth Adams, we can not say. It is more than probable that it was.

In the summer of 1812, Elihu Ives sold for Col. Humphreys, at Pittsburg, Pa., or exchanged for wool from Texas, a flock of half-bloods, three-fourths, seven-eighths, fifteen-sixteenths, and full-bloods, and in 1813 Ives closed a bargain for 38,000 pounds of wool from the Province of Texas, and writes of a brother who had gone into Kentucky with 42 rams. The wool thus obtained, by exchange of sheep and manufactured goods, was sent east to Humphreys's mills at Humphreysville, Conn. These trifling facts may now seem unimportant and not worthy of record, but to the historian and economist they are full of meaning.

Col. Humphreys bred his flock for a number of years with great success and satisfaction to himself. The very ones he brought from Spain, he says, increased half a pound in their fleeces; and their descendants continued to improve in that and every other particular. He was assiduous in the improvement of flocks in his own neighborhood and in pushing that improvement into the far west and southwest. It is said by some that he disposed of his flock about 1813, through Elihu Ives, as elsewhere related, though the weight of authority is that he retained it until his death in 1818, when causes had sunk the Merinos into contempt and neglect, and his invaluable sheep were then scattered, and as a general thing fell into the hands of those who attached no great value to their blood, for there were but two or three instances where they were preserved distinct after 1826. The improvement made by Col. Humphreys was not marked, but that the flock was a marked and very valuable one and a great acquisition to the country admits of no question; from it was procured the foundations of the best flocks of Connecticut, and their success up to 1810 and 1811 prepared the way for the larger importations of these years, and awakened the public to a realization of the great value of the Merino sheep to the wealth and prosperity of the country.

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* New York Gazette, March 16, 1810.

As early as 1796–'97, Dr. James Mease, of Philadelphia, secretary of the "Philadelphia Society for Promoting Agriculture," an enthusiastic writer on agricultural subjects, impressed with a sense of the importance of the Merino breed of sheep, sent two orders to Spain for a Merino ram. One order received no attention, but a friend saw that the other was executed and the animal shipped. It reached the capes of Delaware safely and was there washed overboard in a storm. He sent still another order in 1801, for a pair, and in December, 1803, two pairs reached him, but to his great disappointment they were black. Having at the time no land available for them in the vicinity of Philadelphia, he placed them on the farm of Joseph Cooper, in Gloucester County, N. J. In August, 1804, he fixed his price at $1 for every ewe brought to the ram. Not a ewe was brought; such was the indifference exhibited that not one farmer for two years had the curiosity even to examine the wool. This indifference was probably attributable to the total ignorance of the farmers as to the nature and qualities of the sheep, and to that shyness with which they viewed novelties of all kinds. Mease was inclined at first to think the black color might be the objection, but the equal indifference of the farmers to a white ram of Col. Humphreys' stock, which he afterwards procured, convinced him that the time had not yet come for the conviction of the value of the breed. Trusting, however, that the public mind would be awakened to the importance of the object, and satisfied that he was, at least, doing good service to the country, the zealous doctor determined to proceed, and to infuse the wool of his Spaniards into as many fine American ewes as he could procure. In July, 1805, he bought a flock of sheep, selected fourteen fine-wooled ewes, which he put with the Spanish rams, and sold all the rest. One of his Spanish ewes strayed away and was lost, the other yeaned her first American lamb November, 1804, another the same time next year, and a third in June, 1806. Her example was followed next year by several of the half-blood ewes, progeny of the Spanish rams, an occurrence altogether novel on the part of American sheep, and attributable, probably, to the constant high keep of the flock. At least, so thought Dr. Mease.

The owner was pleased to find that notwithstanding his rams were black, yet that those which were the produce of a cross with white ewes were in many instances white. In some cases of twins one was black and the other was white; in others the wool was dark gray or rather pepper and salt.

Improvement in wool was evident. The effect of the cross was apparent, not only in the universal coating of the body, but also in the form of the progeny. The American ewes were long legged and narrow backed, but the very first cross gave them some resemblance to the compact figures of their sires, which increased in proportion to the increase of blood. Some were killed and the mutton pronounced delicious. Having no demand for the progeny of his black rams for breeding pur-

poses, although carrying nearly as fine wool as he ever saw, Dr. Mease was induced to kill them. His last full-blood ram lamb was killed in July, 1809, for fear that he would begin to exercise his powers among the ewes. He was out of his own imported black ewe, by Col. Humphreys' full-blooded white ram. The mutton of this ram was excellent, like that from the Welsh sheep.

In the fall of 1808 Dr. Mease added 16 half-blood Dishleys or New Leicesters and crossed them with his new acquisition, by which the form of the progeny was improved. A shorter-wooled sheep would have been preferred, but all distinctions of sheep in that section of the country had been lost and the forms of the drove sheep were very inferior. He took his chances as to the result of the cross on the working quality of the wool and made sure of improving the form. The flock soon partook of the quality of the Leicester sheep. Leicester rams were introduced into it and the black Spanish Merino blood eliminated.

Although Dr. Mease bred them assiduously for a few years, it is not known that any one bought them. In November, 1808, he advertised a few half-blood Merino rams for sale. Their color was not given. Somewhat later than this there were fifteen black Merino rams, "selected from the best flocks in Spain," advertised in one lot for sale in Boston. Dr. Mease bred from the Humphreys sheep also, and it was from him that the first Merino ram introduced in South Carolina was purchased early in 1808.

In 1807 Dittmar Basse Muller, formerly of Germany, then of Philadelphia, imported 6 Merino sheep from the flock of the Prince of Hesse Cassel. These sheep were all remarkably fine animals, and, at Muller's request, James Caldwell took them to his farm at Haddonfield, near Philadelphia, and kept them until they recovered from the effects of the voyage and were in proper condition to travel. Caldwell purchased one of the rams, for which he paid $100, to replace one he had bought of Col. Humphreys in 1806, but which had died, and bred him to the two Merino ewes, also purchased from Col. Humphreys with the ram in the fall of 1806. Mr. Caldwell, writing nearly twenty years after this, had every reason to believe that the sheep imported by Muller were pure Merinos. The descendants of Muller's ram and the Humphreys ewes were fine animals, and some of them became justly celebrated. Columbus, the first ram descendant, when 2 years old, in the spring or early summer of 1810, sheared 9 pounds of wool, and weighed, after being shorn, 145 pounds, and Columbia, the first female descendant, at the same age and at the same time, sheared 7 pounds 9 ounces. A yearling ram, Spaniola, sheared at the same time 12 pounds of washed wool, and his weight after being shorn was 142 pounds. The paper recording these facts makes the further statement that—

> Columbus, Columbia, and Spaniola are pure Merino descendants of the finest flocks in Spain; the sire was selected from the Prince of Hesse Cassel's flock, that had been a present from the King of Spain, and the ewes imported by Col. Humphreys while minister to that country.

Columbus, though a fine sheep, was excelled by one of his getting, Americus, a very superior animal, and considered by Mr. Caldwell the best Merino ram he ever met with, although he had traveled from Boston to Alexandria for the purpose of examining all the early importations from Spain, and of purchasing the best he could find. And he had done much in that line, expending more than $40,000 in purchasing the cream of almost every importation from Spain, but could never find one equal in every respect to Americus. This ram lamb sheared 12½ pounds of wool, which was sold by Mr. Caldwell for $25.

Mr. Caldwell accumulated a large flock, buying largely of the Jarvis importations of 1810. He continued to breed from his earlier importations and these Jarvis sheep until 1815, when he sold the principal part of his flock to a Mr. Howell, of New Jersey, who subsequently transferred it to William R. Dickinson, of Ohio. Caldwell received from Howell $300 for Columbus at a time when the best imported Spanish rams were to be had for $50, and for Americus Howell gave him $500.

In 1809, as shown by the records of the Massachusetts Society for Promoting Agriculture, Capt. William Bartlett received a premium of $50 for the importation of a Merino ram. This ram was procured at Cadiz, Spain, in May, 1809. On March 14, 1810, a Merino ram was sold in New York City for $1,000, "brought out lately from Cadiz by Capt. Barnum in the ship *Atlanta*."* On April 11, 1810, Capt. Page, of the brig *South Carolina*, landed at Philadelphia two Merino rams brought from Cadiz. They were exposed for sale on May 5. One was sold to Joseph Allen Smith for $510; the other was withdrawn from sale after an offer of $350 had been made for him.

An importation of French Merinos must here be noted. Although the French Government in June, 1809, had prevented the exportation of a dozen sheep belonging to R. R. Livingston, his successor as minister to France, Gen. John Armstrong, was permitted to take with him, on his departure for the United States, 20 Merino sheep that he purchased of Mr. Paris. One of the sheep died on the passage. The 19 were landed November, 1810, and taken to Clermont on the Hudson; some of them to the flock of Mr. Livingston. They were bred separately and were freely disposed of. In October, 1813, 20 rams, 1, 2, and 3 years old, descendants of the importation of 1810, were offered for sale in the city of New York. They were described as of the first quality, and all as—

the produce of the flock selected by Gen. Armstrong when minister at France (and imported by him under special license), from the celebrated flocks of Mr. Paris, one of the first breeders of Europe, and have remained unmixed with any others. They are equal to the Rambouillet or Escurial either in size, form, fineness, or quantity of wool, and challenge a competition with any in the United States.

The year 1810 saw the United States in the midst of a mania for home manufactures and fine wool. The troubles with France and Eng-

*New York Gazette, March 16, 1810.

land had virtually destroyed her infant commerce and thrown her upon her own resources. Manufactures had been growing, but it had been a difficult matter to sell an American article could a British one be had at any price, however extravagant. Anglomania was as prevalent in those days as it is now. But the time did come when public opinion forced everyone to wear goods of American manufacture, consequently manufactures had a great spring and fine wool was in great demand. Attention was now turned to the flocks of Livingston and Humphreys, and rams and ewes of the pure breed, and even half-bloods, sold at high prices. Livingston sold lambs at $1,000 apiece. Humphreys realized as much. A fresh importation of 1 ram from Spain sold for $1,000, and about the same time Humphreys made a sale of 2 rams and 2 ewes for the unprecedented price of $1,500 each. The fever ran from town to town and from farm to farm. Advertisements were accompanied with marvelous statements of the value of the Merino and its wool and the great profits in raising them. The barren hillsides gave promise of rich returns for their scanty pasturage, and the worn-out lands were to be enriched by the pasturing of sheep upon them, whose fleeces were, in return, to enrich their owner. Farms that the owners desired to dispose of were advertised as peculiarly adapted to the raising of Merino sheep. The most scrubby, common sheep that the country could produce were named after the most noted Spanish patriots. Sloops that sailed from New York coastwise were named "Merino." An honest old farmer of Hopewell, N. J., who raised half a bushel of potatoes from one, called them Merino potatoes. A bull calf in Pennsylvania was guaranteed as of the genuine Merino breed; and a Dutch farmer's wife of the State named her tenth child Merino Schmidt.

The mania did not escape the notice of the wags, and an advertisement appeared in a Baltimore paper offering for sale a large number of the celebrated Tuscan improved breed, lineally descended from the best breeds of the Golden Age, with fleeces as much superior to the finest Merino as the Merino fleece is to the common marengo.

But what makes the Tuscan fleece so invaluable and gives to the breed such incalculable value is that the fleeces are naturally endued with all the various colors, of a more perfect and brilliant character and luster than can be imparted to them by the most celebrated dyes, of the most beautiful glossy black; others of brilliant vermilion and scarlet; some of the splendid Tyrean purple, and some of the gaudy saffron; also the seven original colors, red, orange, yellow, green, blue, indigo, and violet. And by arranging the threads of these several-colored fleeces in the loom in their proper order and agreeably to their original refrangibility, the beautiful and fashionable rainbow cloth is made, and it is only from the fleeces of the Tuscan sheep that the rainbow cloth can be made. Besides the immense emolument from these sheep, they are the most delightful resource of intellectual enjoyment to philosophic experimentalizing minds, as gentlemen may amuse themselves in the production of an endless variety of colored fleeces by skillfully blending the agents who are to to weave the wool in nature's loom.

And not to be behind Livingston, Humphreys, and others as patriots and public benefactors, these sheep were placed at the low price of $5,000 for rams and $500 to $1,500 for ewes.

But events were now transpiring in other parts of the world that opened opportunities for large purchases of the Spanish Merinos, their shipment to the United States, and a consequent reduction of prices, which put them within the reach of many enterprising men. The wars in Europe, the British orders in council, the various decrees of Bonaparte, our own embargoes, and all the various acts of all the powers from 1802 to 1810 tending to cripple American commerce, served as a stimulant to American manufactures, and at the same time opened a channel by which fine wool, the base of one of the most important industries, was to be furnished. The invasion of Spain by Bonaparte not only involved France and Spain in war, but let loose the spirit of faction in the latter. Torn with dissensions within and invaded from without, the once proud, rich, and powerful nation presented a lamentable spectacle. Bonaparte confiscated the estates and flocks of the powerful nobles who would not take up his cause; the Spanish Junta confiscated the property of those who did not support the national or Spanish cause, so, between two fires, all the fine cabañas of Merino sheep were confiscated to whatever party had success in laying hands upon them. This inclined their owners to sell them when they became endangered and when opportunity presented itself. The opportunity thus presented was also taken advantage of by the American consuls at Lisbon and Cadiz. They saw an opportunity to enrich their country with the finest wooled sheep of Europe at the very time their country most needed the valued animal. The first to take action was the consul at Lisbon.

William Jarvis was born at Boston, Mass., February 4, 1770. He was the son Dr. Charles Jarvis, a distinguished physician and surgeon. He was educated for a merchant, into which business he entered actively and prosecuted successfully, until indorsements on paper of a friend compelled him to retire. For five years thereafter he was captain and supercargo of a ship, in which he had half interest. He was enabled to pay all his debts and free himself from pecuniary embarrassment. In February, 1802, he was appointed by President Jefferson consul to Lisbon and acting chargé to Portugal. He made a good business consul and successful diplomat. It was fortunate for the United States that he made such successful efforts to ameliorate the trouble to which our shipping was subjected that at the commencement of the Peninsular war we secured the immense neutral trade of the armies engaged in that conflict. It was fortunate also that he possessed a mind comprehensive enough to see the great advantage to his country of the acquisition of the Merino sheep, and the energy of character necessary to secure them. There can be no question that his example in securing some of the best sheep in Spain, not only for himself but for others, was a great incentive to the trade in them that immediately followed, by which so many thousands were transferred to this country to increase her wealth and encourage her manufactures of fine woolen goods.

Passing for the moment the details of that invaluable service rendered by him in leading the way in sending Merino sheep to the United States in such numbers as to establish them firmly in many of the States, it may be said that Mr. Jarvis remained at Lisbon until October 22, 1810, when he sailed for home, and in April, 1811, removed to Weathersfield, Vt., taking with him all his animals, including his "selected Merinos (about 400), Dutch cattle, Portuguese swine, goats, donkeys, etc., a Spanish shepherd and a noble shepherd dog." In the care and breeding of his stock, surrounded by a large family and devoted friends, he passed the remainder of his days, dying October 21, 1859, at the advanced age of 89 years and 9 months. Soon after his death the flock of sheep that he had bred with so much care and solicitude for forty-eight years were scattered, and the farm at Weathersfield does not, or rather did not a few years since, breed a single pure-blooded Merino sheep.

When Mr. Jarvis, at Lisbon, heard that Col. Humphreys had obtained his 100 sheep, and saw their beauty as they were brought to be shipped from his consular port, he was very desirous to procure some, and immediately wrote to a trusted friend in Spain to that effect, but in reply was informed that it was impossible. He possessed great facilities for acquiring information regarding Spanish affairs, and, from his keen observation of events, availed himself of the first opportunity to obtain Merinos, convinced that the extended introduction of this fine-wooled breed would greatly increase the prosperity of the country. He made two unsuccessful efforts, one in 1806 and again in 1809; but now circumstances favored him. Napoleon had plunged Europe into war. Spain was in a distracted state from French invasion and internal dissension, which, as Mr. Jarvis was informed, would enable him to purchase some of the jealously guarded Spanish flocks, for it would be much more to the profit of the owners to exchange them for gold than to have them eaten by the French soldiers. He wrote to the Hon. George W. Erving, who had succeeded Col. Humphreys as minister at Madrid, telling him of the information he had received, and requesting him to use his influence in obtaining for him 100 Merinos, mostly rams, and directing their shipment to Cornelius Coolidge & Co., of Boston. This was in September, 1809. In December Jarvis received permission to purchase and export from the kingdom 200 of the Escurial flock, and Sir Charles Stewart, the British ambassador, was also permitted to export a like number.

The first arrival of these sheep was on April 13, 1810, and the Boston Chronicle makes the announcement:

> We are happy to learn of the safe arrival of the ship *Edward*, from Lisbon, with 45 genuine full-blooded Merino sheep. Massachusetts is indebted to the patriotic exertions of Messrs. Cornelius Coolidge and Francis J. Oliver, merchants of this town, for this valuable acquisition to its manufacturing interests.

For this importation into Massachusetts in 1810 Cornelius Coolidge received the premium of $250, offered by the Massachusetts Society for Promoting Agriculture, for the first 10 ewes imported from Spain.

Eleven of the 45 sheep imported in the *Edward*, all rams, sold for $10,902.66, nearly $1,000 each. Eleven more were rented at this time for $4,440, or a little more than $400 each. These sheep were Escurials.

Succeeding this first shipment of 45 Spanish Merinos to Boston was a shipment to Alexandria, Va., which arrived in the Potomac May 1, 1810; but the vessel, running aground just below the city, did not get off to land her cargo until May 5. This importation is directly traceable to the good offices of Thomas Jefferson. The Columbia Agricultural Society, of Georgetown, D. C., at the fair of which Madison sported his suit of domestic manufacture, embraced in its membership many wealthy and public-spirited farmers of Maryland and Virginia, men who, like Jefferson, entertained the idea that "we should encourage home manufactures to the extent of our own consumption of everything of which we raise the raw material," and who believed it the duty of every good citizen "to use no foreign article that can be raised within ourselves." They looked to the improvement of their flocks by the introduction of the Merino sheep, and requested the assistance of Jefferson, who, it was known, favored the idea, and had expressed his desire for some of that breed to make it "a blessing to his countrymen." From Monticello, November 23, 1809, Jefferson wrote to Hon. George W. Erving, United States minister at Madrid:

> An American vessel, the property of a respectable merchant of Georgetown, on a voyage to some part of Europe for general purposes of commerce, proposes to touch at some part of Spain with the view of obtaining Merino sheep to be brought to our country. The necessity we are under, and the determination we have formed of emancipating ourselves from a dependence on foreign countries for manufactures which may be advantageously established among ourselves, has produced a very general desire to improve the quality of our wool by the introduction of the Merino race of sheep. Your sense of the duties you owe to your station will not permit me to ask, nor yourself to do, any act which might compromit you with the Government with which you reside, or forfeit that confidence on their part which can alone enable you to be useful to your country. But as far as that will permit you to give aid to the procuring and bringing away some of the valuable race, I take the liberty of soliciting you to do so—it will be an important service rendered to your county—to which you will be further encouraged by the assurance that the enterprise is solely on the behalf of agricultural gentlemen of distinguished character in Washington and its neighborhood, with a view of disseminating the benefits of their success as widely as they can. Without any interest in it myself, other than the general one, I can not help wishing a favorable result, and therefore add my solicitations to the assurances of my constant esteem and respect.

Minister Erving turned the matter over to Consul Jarvis, who shipped on the *Diana*, then lying at Lisbon, 12 of the Escurials to James H. Hooe, a merchant at Alexandria, with directions to present a pair to Ex-President Jefferson, a pair to President Madison, and to sell the remainder, which orders were executed upon their arrival May 5, 1810.

Those that went to Jefferson and Madison are accounted for in the following correspondence. Madison writes to Jefferson on May 7:

The inclosed letter from Jarvis accompanied one to me on the subject of the Merinos. I learn that they have arrived safe, but the vessel is aground a few miles below Alexandria. Joseph Doherty is gone to bring them up, making the selections warranted by Mr. Jarvis. As the means I shall employ to have my pair conveyed to Virginia will suffice for yours, it will be unnecessary for you to attend to the matter till you hear of their arrival at Orange.

Jefferson acknowledged the receipt of Madison's letter on the 13th, and at some length advanced his views as to the proper use to be made of the increase of the Merinos, not failing to reflect somewhat severely on the conduct of Livingston, Humphreys and others, who were then realizing large prices for their sheep, Livingston having recently sold some for $1,000 a head, and Humphreys receiving $6,000 for 2 rams and 2 ewes. Others had the same views, and the editor of a far-off Indiana paper, while advocating with great warmth the immense advantage to be derived from the introduction of the Merino sheep, did not forget to give a back-handed compliment to Livingston and Humphreys by the expression of an opinion that, if the man who would part with a sheep for $1,000 was a patriot, a much greater patriot was the man who received $1,500. Jefferson's letter was written at Monticello and was in these words:

I thank you for your promised attention to my portion of the Merinos, and if there be any expenses of transportation, etc., and you will be so good as to advance my portion of them with yours and notify me of the amount, it shall be promptly remitted. What shall we do with them? I have been so disgusted with the scandalous extortions lately practiced in the sale of these animals, and with the ascription of patriotism and praise to the sellers, as if the thousands of dollars apiece they have not been ashamed to receive were not reward enough, that I am disposed to consider as right whatever is the reverse of what they have done. Since fortune has put the occasion upon us, is it not incumbent upon us so to dispense this benefit to the farmers of our country as to put to shame those who, forgetting their own wealth and the honest simplicity of the farmers, have thought them fit objects of the shaving art, and to excite by a better example the condemnation due to theirs? No sentiment is more acknowledged in the family of agriculturists than that the few who can afford it should incur the risk and expense of all new improvements, and give the benefit freely to the many of more restricted circumstances. The question then recurs, what are we to do with them? I shall be willing to concur with you in any plan you shall approve, and in order that we may have some proposition to begin upon, I will throw out a first idea, to be modified or postponed to whatever you shall think better.

Give all the full-blooded males we can raise to the different counties of our State, one to each, as fast as we can furnish them. And as there must be some rule of priority for the distribution, let us begin with our own counties, which are contiguous and nearly central to the State, and proceed, circle after circle, till we have given a ram to every county. This will take about seven years; if we add to the full descendants those which will have passed to the fourth generation from common ewes, to make the benefit of a single male as general as practicable to the country, we may ask some known character in each county to have a small society formed which shall receive the animal and prescribe rules for his care and government. We should retain ourselves all the full-blooded ewes, that they may enable us the sooner to furn-

ish a male to every county. When all shall have been provided with rams, we may, in a year or two more, be in a condition to give a ewe also to every county, if it be thought necessary. But I suppose it will not, as four generations from their full-blooded ram will give them the pure race from common ewes.

In the meantime, we shall not be without a profit indemnifying our trouble and expense. For if of our present stock of common ewes we place with the ram as many as he may be competent to, suppose 50, we may sell the male lambs of every year for such reasonable price as, in addition to the wool, will pay for the maintenance of the flock. The first year they will be half-bloods, the second three-quarters, the third seven-eighths, and the fourth full-blooded, if we take care in selling annually half the ewes, also to keep those of highest blood; this will be a fund for kindnesses to our friends, as well as for indemnification to ourselves; and our whole State may thus, from this small stock so dispersed, be filled in a very few years with this valuable race, and more satisfaction result to ourselves than money ever administered to the bosom of a shaver. There will be danger that what is here proposed, though but an act of ordinary duty, may be perverted into one of ostentation; but malice will always find bad motives for good actions. Shall we, therefore, never do good? It may also be used to commit us with those on whose example it will truly be a reproof. We may guard against this, perhaps, by a proper reserve, developing our purpose only by its execution.

To this letter Madison replied as follows, on the 25th:

I have duly received your favor of the 13th. The general idea of disposing of the supernumerary Merino rams for the public benefit had occurred to me. The mode you propose for the purpose seems well calculated for it. But as it will be most proper, as you suggest, to let our views be developed to the public by the execution of them, there will be time for further consideration. When the sheep came into my hands they were so infected with scab that I found it necessary, in order to quicken and insure their cure, to apply the mercurial ointment. I hope they are already well. One of the ewes has just dropped a ewe lamb, which is also doing well. I expect my overseer every day to conduct them to Orange. As he will have a wagon with him, the trip, I hope, may be so managed as to avoid injury to his charge.

The Joseph Doherty referred to in Madison's letter of May 7 was a farmer living near Alexandria, who was then breeding the Merino from Dupont's stock. The National Intelligencer of July 23, 1810, contains his advertisement for the sale of "several three-eighths blooded Merino rams of Mr. Dupont's stock, yeaned in February." To him Jefferson writes, May 24:

I have duly received your two letters of the 5th and 14th, and am thankful for your aid in the safe delivery of our Merinos. The President, on their arrival, had notified me of it, and that he would receive and forward mine to Orange with his own; from thence I can get them here in a day. As soon as I heard of their arrival I made up my mind, instead of receiving thousands of dollars apiece for their offsprings, to lay myself out for furnishing my whole State gratis, by giving a full-blooded ram to every county, as fast as they can be raised. Besides raising from my imported ewe I shall put as many of my own as the ram is competent to, and as four crossings give the pure breed, when that come in, I shall make quick work of furnishing one to every county. By these means I hope to see my own State entirely covered with this valuable race, at no expense to the farmers, and the moderate one to me of maintaining the flock while doing it. In the meantime I shall have half-blood rams the first year, three-fourths blood the second, and seven-eighths the third to give to my friends. Any of these which would be acceptable to you you shall be welcome to. I shall keep my flock under my own eye; I have been obliged to do

this for sometime with my present race, keeping a person constantly following them attended by the shepherd's dog I received from France, perfectly trained to the business. They have now the benefit of as fine pasture as can be, the dog keeping them from injuring the grain in the same inclosure.

For the shepherd dog here alluded to Jefferson was indebted to Dupont de Nemours, to whom he had written March 2, 1809: "If you return to us, bring a couple of pairs of true-bred shepherd's dogs. You will add a valuable possession to a country now beginning to pay great attention to raising sheep."

The Merinos were safely taken to Montpelier and Monticello by the agents or managers of the two estates, who came to Fredericsburg to receive them. When they caught sight of these animals, so renowned at the time throughout the country, they were woefully disappointed. "The sheep were little bits of things," says Mr. Bacon, who was Jefferson's agent, "and Graves said he would not give his riding whip for the whole lot." Their instructions were to divide them by tossing up for the first choice. "So," says Mr. Bacon, "I put my hand into my pocket and drew out a dollar, and said, 'Head or tail?' I got the best buck. He was a little fellow, but his wool was as fine almost as cotton. When I got home I put a notice in the paper at Charlottesville that persons who wished to improve their stock could send us 2 ewes, and we would keep them until the lambs were old enough to wean and then give the owners the choice of lambs, and they leave the other lamb and both of the ewes. We got the greatest lot of sheep, more than we wanted, 200 or 300, I think, and in a few years we had an immense flock. People came long distances to buy 1 full-blooded sheep. At first we sold them for $50, but they soon fell to $30 and $20, and before I left Mr. Jefferson Merino sheep were so numerous that they sold about as cheap as common ones."*

On December 5, 1810, Jefferson expresses his thanks to Jarvis for putting him in the way to "extend the improvement of one of the most valuable races of our domestic animals. The Merinos are now safe with me here, and good preparations made for their increase the ensuing season. Pursuing the spirit of the liberal donor, I consider them as deposited for the general good, and divesting myself of all views of gain I propose to devote them to the diffusion of the race through the State." His success in this laudable endeavor was marvelous, and to him Virginia was greatly indebted for the first step in a direction that might have made and continued her the greatest State of the Union.

The improvement in wool was so great by the introduction of the Merino that Jefferson, who in January, 1812, wrote to John Adams that "here we do little in the fine way, but in coarse and middling goods a good deal," said later in the same year, "of Merinos we have some thousands, and these multiplying fast; every family of any size is now getting machines on a small scale for their household purposes." Of

* Parton's Life of Thomas Jefferson.

his own household at Monticello, in 1815, and the condition of household manufacture in the State, he says:

> I make in my family 2,000 yards of cloth a year, which I formerly brought from England. The State generally does the same, and allowing 10 yards to a person, this amounts to 10,000,000 yards. * * * Carding machines in every neighborhood, spinning machines in large families and wheels in the small, are too radically established ever to be relinquished. The finer fabrics, perhaps, and even probably, will be sought again in Europe, except broadcloth, which with the vast multiplication of Merinos among us will enable us to make much cheaper than can be done in Europe.

To return to the sheep imported on the *Diana*, which Mr. Jarvis directed to be sold. They were advertised widely in Virginia, Maryland, and Pennsylvania papers as being selected with great care, and believed to be of the first class of Merinos, and the Richmond Enquirer of May 15 advised the farmers of Virginia to procure some of this excellent breed of sheep in order to put down the monopoly rising in the eastern States. Mr. Hooe reserved 1 ram for himself, and 6 others were sold at auction June 5. Chief-Justice Cranch and Dr. Thornton, of Washington, bought 3 rams; 1 was sold to John Threlkeld, for Gen. John Mason, of Analostan Island, and himself; 1 to Gen. Thompson Mason, of Virginia, and 1 to Mr. Philips, of Delaware.

The descendants of the rams sold to Judge Cranch, Gen. John Mason, and John Threlkeld were numerous next year, and sold freely to the farmers of Virginia and Maryland, Judge Cranch advertising "a number of ram lambs half-blood descended from Mr. Whitney's flock in Virginia. The lambs are from the rams first imported into Alexandria, May, 1810, with those presented to President Madison and Thomas Jefferson."

Succeeding the arrival of the *Diana* at Alexandria was that of the *Maria Theresa* at New York, on May 28, with 7 Escurials consigned to Hicks, Jenkins & Co. Six of them were sold for $7,500, or an average of $1,250 each; the seventh one was affected with the scab and not sold at that time. On June 8 there was an arrival of 3 at Baltimore, consigned to Appleton & Co., and their arrival on the *Augusta* is coupled with the information that the vessel was to have taken 28 sheep, but they were interrupted by the Spaniards on the borders of Portugal. The *Mark and Abigail* arrived at Newburyport with 9 on June 10, the *Hamlet* at Boston with 6 on the 15th; the *Three Brothers* with 9 on the 18th, and the *Patriot* with 12 on the 20th. The *Three Brothers* and the *Patriot* landed at Boston, and the cargoes of the four last-named vessels were consigned to Coolidge & Co. On June 17 the *Traveller* landed 24 sheep at New York from W. Jarvis at Lisbon, consigned to R. Crowningshield. On the 28th Mr. Crowningshield offers for sale 5 Merino ewes and 1 buck whose fleeces were of superior quality. It is reasonable to infer from the date that these were Escurials shipped by Jarvis and landed on the 17th.

On July 2 the *Telemachus* landed from Lisbon 3 rams and 9 ewes consigned to Coolidge & Co., at Boston, and on the 20th the *Herschell* arrived at Portland with 43 sheep, 40 for N. Gilman, of Portsmouth, N. H., and 3 for Capt. Lewis, master of the vessel. There is but little doubt that all these shipments were of the 200 Escurials purchased by Mr. Jarvis.

The purity of these Jarvis sheep did not pass unchallenged. On June 7, 1810, the American Daily Advertiser, of Philadelphia, published this communication:

Those desirous to obtain a Merino flock should be cautious of those lately imported into this country. From the great demand it has induced the captains, supercargoes, and others to attain them by every species of fraud. The captain, etc., requests the butcher to put up a certain number of sheep for sea stores without regard to blood, size, quantity or quality of wool. They are brought to America and purchased for Merinos, at the same time partaking of the meanest sheep and the various kinds of the country, as it is well known by those conversant in the improved breed of sheep but few if any fall into the hands of the butchers. The captain of the *South Carolina* informed me the above was the mode he procured his, and the whole was inferior to the half-bloods of the country; and of the 45 lately imported into Boston, I am informed not more than 4 were entitled to the name of full-blood Merinos.

We have in this communication an intimation that others besides Mr. Jarvis were shipping Merinos—or other Spanish sheep—to the United States. Indeed, we learn from another sea worthy that during the spring (1810) 15,000 Merinos had left Spanish ports and Lisbon for the United States. It was stated at the time that Col. Humphreys or his friends furnished the material for these attacks upon the purity of the Jarvis importations, or at least upon some of those made in June. Col. Humphreys was of too high a character to make or countenance a misrepresentation or to injure another; what those would do who were interested in handling his sheep can not be said. That poor sheep came over on these sailing crafts with the good ones is more than probable; indeed, our knowledge of human nature the world over compels us to accept as true the statement of the captain of the *South Carolina* that he procured from the butchers sea stock "the whole inferior to the half-bloods of the country," and shipped them on his own account, and doubtless other than sea captains did the same; but it is an undisputable fact that the Jarvis importations of April, May, and June, 1810, were supposed to be good stock, and, without much doubt, were Escurials. Mr. Jarvis's statement that they were Escurials is entitled to great consideration and has been generally accepted, but in seeming contradiction is a statement made by Chancellor Livingston. Livingston was a keen observer and kept his eye on the early importations, making selections from the best of them for his own flock. On March 22, 1811, he wrote G. W. P. Custis, of Arlington:

The great number (Merinos) that have been brought into New York has enabled me to become acquainted with all the different breeds of Spain, except those of the Escurial, none of which have, as I believe, as yet been imported, though I have a letter from a gentleman in Lisbon who writes me that he in conjunction with Lord

Cochrane (his nephew) are in treaty for all that remains of that flock, the greater part of them having been destroyed. They are to be sent to New York, and may be hourly expected.

Escurial Merinos imported into the United States in April, May, June, and July, 1810, shipped by William Jarvis at Lisbon.

Consigned to—	Date of arrival.	Port of entry.	Vessel.	Sailed from—	No.
	1810.				
Cornelius Coolidge & Co	Apr. 13	Boston	Edward	Lisbon	45
James H. Hooe	May 5	Alexandria	Diana	do	12
Hicks, Jenkins & Co	May 28	New York	Maria Theresa	do	7
Appleton & Co	June 8	Baltimore	Augusta	do	3
Cornelius Coolidge & Co	June 10	Newburyport	Mark & Abigail	do	9
Do	June 15	Boston	Hamlet	do	6
Do	June 18	do	Three Brothers	do	9
Richard Crowningshield	June 18	New York	Traveller	do	24
Cornelius Coolidge & Co	June 20	Boston	Patriot	do	12
Do	July 2	do	Telemachus	do	12
Capt. Lewis and N. Gilman	July 20	Portland	Herschell	do	43
Total					183

The last of these shipments, that of 43 on the *Herschell*, was made before, as far as known, Mr. Jarvis had made any more purchases than that of the Escurials. Mr. Chapman states that some of the first shipments of Mr. Jarvis were to Messrs. C. Coolidge & Co.; of Boston, and were part of a lot of 65 that were purchased in Spain on joint account of Mr. Jarvis, Nicholas Gilman, esq., of Portsmouth, N. H., Messrs. Coolidge & Co., and Mr. Charles O'Neil, of Lisbon. Mr. O'Neil subsequently disposed of his interest to Mr. Jarvis. It is not known what sheep these were, for Mr. Jarvis in his correspondence makes no mention of them. It is barely possible, though not probable, that a part of them were on the *Herschell* consigned to Mr. Gilman and shipped from Lisbon on June 10. The only grounds on which this probability is admitted is the fact that the *Herschell* left for Portland on the day the *Three Brothers* left for Boston. She had on board 13 sheep, but when some days out was obliged to put back to Lisbon and had lost 10 of them. She was then reloaded or rather took on more sheep, 40 of which arrived, consigned to Mr. Gilman.

Four days after this shipment of June 10, Mr. Jarvis made a purchase of 100 sheep of a cabaña he nowhere mentions, nor does he make any reference to the purchase. The following certificates explain the transaction, and the name of the cabaña, the Viadillo:

[Royal arms seal.]

In the reign of Our Lord, Don Ferdinand VII—1807.

I, Saturio Rubio Saur, chief herdsman of the flocks of his excellency the Marquis of Viadillo, do hereby certify that Don Juan Pablo Saur has purchased 200 sheep of said flocks, produced from the best Merino flocks in Spain.

In testimony of which, I have passed the present certificate at the town of Albuquerque, this 1st May, 1810.

SATURIO RUBIO SAUR.

I, the undersigned, one of His Majesty's Don Ferdinand VII, hereby certify that the flocks of his excellency the Marquis of Viadillo are esteemed of the best Merino

breed in Spain, as set forth in the above certificate of his excellency's chief herdsman, Sieur Saturio Rubio Saur.

Done at the town of Albuquerque this 1st day of May, 1810.

ANTONIO MAZANA.

I certify that Don Guelhoume Jarvis, consul-general of the United States of America, has purchased 100 sheep of the Merino flock mentioned in the within certificate.

JUAN PABLO SAUR.

LISBON, *June 14, 1810.*

The sheep were immediately shipped to the United States, consigned to different parties, and accompanied with copies of the above certificates. They arrived during the month of August, and the parties to whom 24 were consigned at Philadelphia, in addition to the publication of the certificates, announced that they were from Mr. Jarwis and from "the same flock that was sent to the King of Great Britain," and that it was "presumed that the uncommon hazard and exertions made in selecting the above sheep will prevent future intended importations."

The arrival of these sheep and their disposition is shown in the following table, which includes also the remnant of the purchase of which Mr. Gilman and others had a part interest.

Consigned to—	Date of arrival.	Port of entry.	Name of vessel.	Shipped from—	No.
	1810.				
T. B. Freeman	Aug. 10	Philadelphia	Unity	Lisbon	24
Seth Russell & Sons	Aug. 11	New Bedford	Sally	do	32
James and John Dunlap	Aug. 16	Petersburg	Powhatan	do	39
James H. Hooe	Aug. 22	Alexandria	Louisa	do	35

The consignment to T. B. Freeman had increased during the passage, for on September 5 he sold at auction, at the Merchants' Coffee House in Philadelphia, "25 Merino rams and ewes from the same flock that was sent to the King of Great Britain, selected by two confidential men well acquainted with the royal breed, and at great expense and difficulty." The concourse on this occasion was greater than on any similar gathering, and the bidding described as quite spirited. The sale continued two hours, during which the whole flock, 19 ewes and 6 rams, were sold at these prices:

(1) Ram	$200	(14) Ewe	$400
(2) Ram	280	(15) Ewe	235
(3) Ram	370	(16) Ewe	300
(4) Ram	315	(17) Ewe	140
(5) Ram	300	(18) Ewe	250
(6) Ram (sick)	140	(19) Ewe	185
(7) Ewe	120	(20) Ewe	165
(8) Ewe	200	(21) Ewe	100
(9) Ewe	200	(22) Ewe	105
(10) Ewe	190	(23) Ewe	255
(11) Ewe	255	(24) Ewe	350
(12) Ewe	375	(25) Ewe	150
(13) Ewe	230		

Total amount of the sale, $5,960, or an average per head of $238.40; highest-priced ram, $370; average of the healthy rams, $293; highest-priced ewe, $400; average of the ewes, $229.

Most of the purchasers were from Pennsylvania. Some were from New Jersey and Delaware, and it was thought certain the prices would have ranged higher had not 200 Merino sheep arrived in the city within a few days and were known to be for sale—Infantados imported from Cadiz by Capt. Charles Stewart, U. S. Navy.

The shipment to Alexandria arrived in good order, and the sheep were sold at Broomlawn, near that city, on September 10, warranted genuine full-blood Merino sheep. The sale was well attended, and Gen. John Mason made a purchase of the Viadillo ram, which next year sheared 9 pounds of wool, or 1 pound to 9½ of the carcass, his Infantado rams giving 1 pound to 10, and his Paular rams 1 to 14½.

The small flock of 39 sent to James and John Dunlap, at Petersburg, Va., turned out badly. Some were lost, and 6 rams and 21 ewes were offered at public sale October 19. The sale was not successful, owing to want of bidders. The sheep were in excellent condition, and there were a number of spectators present, some from the country, and men of fortune, too; but no one seemed anxious to purchase, at least no disposition was shown to give anything like the price which was looked for. After dwelling some time, with no encouragement, the auctioneer dropped his hammer, the conference dispersed, and the sheep were suffered to be carried back to Roslin. Says the Petersburg Intelligencer of November 1:

How great is the difference in public sentiment as regards these sheep, in some parts of the Union from what it is in others. In the Northern and Eastern States the Merinos are sought after with the greatest avidity and the most extravagant prices given, whereas in Virginia the greatest indifference is manifested about them. Perhaps the cause may be found in the spirit of manufacturing, which more generally pervades the former than the latter.

The three purchases made by Mr. Jarvis prior to and including June 14, 1810, aggregated 365, of which 281 were shipped to various ports of the United States, the last shipment being made July 6 or 7, that of the *Louisa* to Alexandria. The 84 unaccounted for may be covered by the consignment to Seth Russell & Sons, at New Bedford, and by deaths. He made no more purchases until July 10.

There are but few recorded facts concerning the disposition of these sheep beyond those already given. Coolidge & Co. disposed of those consigned to them, principally in the New England States. On June 28, when Richard Crowningshield offered five ewes and one buck for sale in New York City, P. P. Schenck offered one ram and two ewes just landed from Lisbon. They were not immediately sold, and were put up at auction on July 3 and disposed of. On July 16 "one ram with horns and two ewes of the genuine Merino breed, lately imported at an eastern port," were offered for sale in New York City by David Coffin. On August 6 "ten rams and ten ewes of the genuine Merino breed, lately

selected at Lisbon by William Jarvis," were offered for sale by William Osborn, of New York. It is possible that these twenty sheep were brought from New England ports; it is, however, more probable that they were brought direct from Lisbon in one of Mr. Osborn's vessels, for he was a shipowner, and their arrival not chronicled. That many such cases are known leads to this conclusion in this particular case.

Mr. Jarvis was not the only person shipping the Spanish Merinos to the United States. During the months of June, July, and August, 1810, at least nine vessels carrying Merino sheep arrived at American ports from other ports than Lisbon, at which place the Jarvis shipments were made, and one from that port with sheep shipped by other parties. The following table gives such details of these shipments as are attainable:

Arrived.	Port of entry.	Vessel.	Sailed from—	No.	Shipped by—	Consigned to—
1810.						
June 14	Providence	Argus	Algeziras	19	Bulkley, Allcock & Oxenford.	Brown & Ives.
July 19	Plymouth	Commerce	Spain	60	do	Joseph Bartlett.
July 28	Boston	Eliza	Algeziras	100	L. B. Goodwin (master).	Goodwin & Whiting.
Aug. 1	Gloucester	Corporal Trim	Lisbon	50	Goold Bros. & Co.	Fitz W. Sargent.
Aug. 1	do	Treaty	Cadiz	15	J. L. Winthrop	J. L. Winthrop.
Aug. 8	New York	Lucy and Elizabeth.	do	34	R. W. Meade	W. Wilson and Mordecai Lewis & Co.
Aug. 18	do	Henry	Gibraltar	19	do	L. Z. Whitney.
Aug. 22	do	Maria	Cadiz	29	do	Buck.
Aug. 23	Philadelphia	Eliza	do	28	do	Do.
Aug. 27	New York	Perseverance	do	30	do	Wood & Skinner.

It will be observed that all these clearances, except that of the *Corporal Trim* from Lisbon and the *Commerce* from some port of Spain, were from Cadiz and adjoining ports. The rapid advance of Napoleon's armies under Prince Victor into southern Spain in the early days of 1810 caused many of the inhabitants, rich and poor alike, to flee to the Mediterranean seaports, taking with them their household goods, their cattle, and their flocks. Many of the latter were disposed of to masters of vessels as sea stock, to be eaten by the crews, and, escaping custom-house surveillance, were shipped and landed and sold at good prices. Cadiz was a good field for such operations, and evidence is not wanting to show that due advantage was taken to purchase sheep at $1 to $3 per head, to be sold in Philadelphia and New York for prices ranging from $300 to $1,000. A case in point is that of Capt. Page, of the *South Carolina*, elsewhere mentioned, who, on May 5, 1810, received $510 for one sheep and refused $350 for another, both of which, according to his own statement, were put up by the Cadiz butchers for his sea stores. Not all the sheep shipped from Cadiz were of this class, however, for about this time one of the best cabañas of Spain became available, and another public-spirited American took advantage of it to benefit his country and himself.

The Duke de Infantado adhered to the national or patriot cause and

Napoleon decreed the confiscation of his estates. His cabaña was one of the most noted of Spain. At this time the duke was in Cadiz, and Charles Henry Hall, then of Connecticut, conceived the idea of purchasing some of the famed Infantado Spanish Merinos. Mr. Hall was introduced to the duke by Mr. Erving, the American minister, and was informed by the duke that his flocks were in positions of safety from the contending armies in various parts of Spain, some of them in Andalusia. The result of the interview was that Mr. Hall made a purchase of 400 sheep for himself and associates, which, he says, were shipped to Virginia, consigned to Messrs. Brown & Rives, at Richmond. Subsequently Mr. Hall and his associates obtained from the duke 2,000 more sheep, having his mark (a brand of V upon the side of the face of the sheep), which were shipped to New York and Philadelphia for account of himself, Commodore Charles Stewart, Consul Richard Hackley, and others. Of one of the cargoes Chancellor Livingston purchased a large number, and many found their way into various States of the Union.

There are some scattering notices of the sales of these Cadiz sheep. On May 25, 1810, Alexander Coffin offered for sale, in New York City, two Merino rams and one ewe imported direct from Spain; on August 7, 1810, Murray & Wheaton advertised three rams and three ewes from Segovia, in Spain, from the flock of Bishop de Castro, and on August 28, 1810, Fontaine & Ferris offered two rams of the Merino breed from the estates of the Duke de Infantado, from Cadiz, by the ship *Maria*, and six days later James Seton sold one ram and some ewes from Cadiz, in the *Perseverance*, consigned to Wood & Skinner. On August 28, 1810, Bleecker, Libby & Co. exposed for sale a remarkably fine Merino ram, said to be a pure Infantado.

The 50 Merino sheep shipped by Goold Bros. & Co. on the *Corporal Trim*, consigned to Fitz W. Sargent, at Gloucester, were sold, on their arrival, to W. S. Burling, of New York State. These sheep were Paulars.

When Napoleon's army in its second invasion of Spain advanced under command of Joseph Bonaparte towards Madrid, the Supreme Junta directing Spanish affairs fled to Badajos, and, their finances being exhausted, it was suggested to this body that it might sell some of the confiscated sheep which were feeding by thousands on the plains of Estremadura. The Junta resorted to the measure proposed to it. Mr. Jarvis was informed that the sale was to take place, by his correspondent, Don Juan Pablo Soler, a merchant of Badajos, in June, 1810, and hastened to improve the opportunity thus offered. Col. John Downie, British commissary-general and a colonel in the Spanish service, possessed great advantages for the selection of the sheep, being high in favor with the Junta, and Mr. Jarvis was fortunate in standing on good terms with him. Four thousand of the Paular flock were bought and sent to the King of England, and Col. Downie purchased the remainder of this celebrated cabaña, between 3,000 and 4,000 (3,945), it being

understood that Mr. Jarvis would share in the purchase. Mr. Jarvis took at first 1,000 and again 400, Col. Downie sending the remainder to Scotland, his native country, with the exception of 1,000 sold to Goold Bros. & Co. and shipped to the United States.

The sale to Col. Downie was consummated June 24, 1810, and the sheep immediately driven to Lisbon, where they arrived early in July. Jarvis sent a clerk in his employ and two men to assist in conducting the sheep out of Spain, giving direction to drive them only nights and mornings and to divide them into two flocks, and, should danger from the armies menace, to move rapidly and get them out of Spain in small parcels, say 250 on one road and 250 on another the same day, and the same number the next day by different roads. They arrived safely, and papers were given certifying to the sale and the pedigree, and copies of these accompanied each and every shipment. Copies of those relating to the Paular flock are here given, or the substance of them:

Firmin Coronado, secretary to the Junta, certified June 25, 18'0, that by the decree of that body of the 24th the Junta had sold to Col. Downie, commissary of the British army, 2,815 ewes, 1,130 males (3,945 in all), 18 dogs, 5 shepherd ponies, and 5 mess kettles, all pertaining to the cabaña, confiscated from Don Manuel Godoy, called Paular flock, and which were to have a free passage to Lisbon or any other convenient port. On the same day the Marquis of Romaña, captain-general of the Spanish armies, granted a passport for this flock from Badajos to Lisbon, enjoining all military and civil authorities to put no hindrance in the way, but to give all necessary assistance.

Two days later, June 27, 1810, at the castle of Piedra, the mayoral or shepherd of this cabaña, added his certificate:

I, Don José Alvarez y Suares, mayoral of the fine Transhumante Leonesa cabaña, called the Paular, certify that for ten years previous to the sale of this flock I was its assistant mayoral, during which time it belonged to the Carthusian order del Paular; that in the year 1796 it was sold by the said Carthusian order to Don Manuel de Godoy, Prince of Peace, in which year I entered upon the sole charge of it, and so remained for fourteen years, making in all twenty-four years, previous to the confiscation by the Government of the property of the said Godoy, that I have had charge of it; and during all this time there has been no mixture of any other cabaña with this; and that at this date there has been sold by the governing Junta of the province of Estremadura to John Downie, colonel of the royal armies of Spain and commissary of the British army, 2,815 ewes and 1,132 males (in all 3,947), all of the best quality and condition, from the said flock, this cabaña being the choicest and best of the Kingdom, and its wool being held in the highest estimation in foreign countries.

The mayoral also certified July 10, 1810, that he had accompanied this flock to Lisbon, and that in his presence Col. Downie delivered to Consul Jarvis 750 ewes and 250 males of the Paular cabaña, and Col. Downie made a similar certificate in which he also stated that he had sold them on that day—July 10, 1810—to Mr. Jarvis.

Consul Jarvis, between this date and the last of the month, increased his purchase by 400 Paulars and 600 Aquierres, and on August 1, 1810,

wrote to a friend in the United States, from which the following is an extract:

Among these scenes of warfare and blood, ever attentive to the interest and welfare of my country, I have profited of an opportunity which has been offered by the Junta of Estremadura selling the confiscated cabañas of Merino sheep they had in their possession, and purchased 2,000 of the best blooded sheep in Spain, Paulars and Aguirres, and have already shipped 1,200 to the different ports in the United States, and am in hopes to ship the rest within eight days. Among my shipments are 220 to Baltimore to the address of Gen. Smith, from whose patriotism I anticipate his taking charge of them with pleasure. To Alexandria I have shipped 50; to Norfolk, 70; to Richmond, about 150. In undertaking so large a purchase, I have been greatly stimulated by the example which government always affords of doing everything within their power to promote the well being of our country The British minister purchased nearly 7,000, and they were considered of sufficient importance to dispatch transports immediately to take to Great Britain 6,000 of them. About 3,000 more have been sent to England by private individuals.

Of the purchase made by Col. Downie of one-half the Paular flock, he sold 1,000 to Goold Bros. & Co., merchants, of Lisbon, who in turn shipped them to the United States, as did also other purchasers from Col. Downie.

The extract from Jarvis' letter just given appeared in many of the newspapers of the United States early in September, 1810, and a few days thereafter was followed by an article in at least one paper which was evidently inspired by him, and is quoted for future reference:

The number of Merino sheep imported from Lisbon within the last month may be justly considered as a matter of astonishment by those who recollect the difficulties which were stated to exist in procuring these animals. It will therefore be gratifying to be informed of the fortunate event which has been the cause of a much larger supply than could ever have been procured by the greatest exertions if that event had not occurred. It will also be beneficial to know what number may be relied upon to prevent erroneous calculations by those who are interested in the breeding of that most valuable animal. It is generally known that in consequence of a decree of the supreme Government of Spain the estates of Don Manuel de Godoy, the Prince of Peace, were confiscated; that on some of the estates were the best flocks of Merino sheep in Spain. The two principal, that of the convent of Paular, sold by the Carthusian friars to the prince in the year 1796, and that of Aguirres, raised from the imperial flock of Charles V, were of the best breed, and a large proportion of them have been sold by the supreme junta of Estremadura to the British commissary general and to the American consul, from whom purchases have been made for this country. Nearly all those purchased by the British commissary have been sent to England, and the whole number secured for the United States does not exceed 3,000, and of these 1,800 have already been imported. Experience shows us that upon an average one-fifth are lost before they are on the lands of the purchasers in this country, including those lost on the voyage, which in many instances has been one-sixth. There will, therefore, remain about 2,400 for the supply of the United States; add to which perhaps 300 of good breed, procured from Cadiz and its vicinity, whence, however, double that number have been imported; but it is very much to be doubted whether more than one-half may be denominated good. The recent importations it is believed are all accompanied with a variety of well-authenticated documents, so as to leave no doubt of the breed being as represented, and it is much to be feared that such a brilliant opportunity of benefiting the wool manufacturer of this country will not again offer.*

*New York Gazette, September 19, 1810.

While it was the object, because it was to the interest, of Mr. Jarvis and his business associates to magnify the difficulties lying in the way of procuring these sheep and to claim for themselves special facilities and possessions, it was equally the purpose of other parties to deny some of these claims and oppose their pretentions. An instance is given in the following letter, dated Lisbon, September 26, 1810, and sent to a gentleman of Boston:

The vessel which brings this letter will bring 200 Merino sheep. Believing that it may be interesting, I take this opportunity to rectify some mistakes that have been made, and explain away some of the almost irreconcilable difficulties that have been said by interested individuals to be placed in the way of their transportation. Such is the state of Spain and the horrid disorders of the country, that the hitherto unchangeable laws, prohibiting their exportation from Spain, have been wholly repealed. The sheep that are coming in the *Sumner* are part of the Paular flock, sold by one of the provincial Juntas as the property of the *sans-culotte* Godoy, or the personage better known by the name of Prince of Peace. They will be accompanied by certificates from the Marquis Romaña and British officers. * * * But it will, therefore, be thus satisfactory to you, that so far from the Spanish Junta having continued the restriction relative to the sheep, there is no difficulty in obtaining them; and further, there are many of the best breed that can be purchased by anyone so choosing. Wool and sheep are now coming down from the frontiers. The fall of Ciudad Rodrigo will occasion more to be brought. About 1,000 in all will be taken to the United States. Many go to Great Britain; a shipment of 1,700 has been made to Bristol alone.

After Jarvis wrote his letter of August 1, and after the data were furnished for the article quoted from the New York Gazette of September 19, Mr. Jarvis purchased about 1,850 sheep of the different cabañas, of which 100 were Negrettis, about 200 Montarcos, and the remainder Aguirres, which were sold for America, making his total shipments to the United States, according to his own statements, nearly, or quite, 4,000, including the 200 Escurials shipped early in 1810 to President Madison, Thomas Jefferson, Coolidge & Co., and others in Virginia, New York, and New England. Albert Chapman finds evidence that he shipped more than 4,000, and in his "Register of the Vermont Merino Sheep Breeders' Association" traces the shipments. We give in this place some extracts from the published correspondence of Mr. Jarvis relating to the importations in which he was largely interested:

When the second irruption of the French armies into Spain, in the winter of 1809, drove the Spanish Junta from Madrid to Badajos, the Junta was without money and without resources, and they durst not levy any taxes on the Estremaduras lest they should disgust that province, and the people should declare in favor of the French. No alternative was, therefore, left them other than to sell the four flocks of Merinos which had been confiscated with the other property of four grandees who had joined France, with license to transport them out of Spain. These flocks were the Paular, which had belonged to the celebrated Prince of Peace; the Negretti, which had belonged to the Conde Campo de Alange, the Aguirres (the wool of which was known in England as the Muros, this flock having been the property of the Moors before their expulsion from Spain), which had belonged to the Conde de Aguirres, and the Montarco, which had belonged to the Conde of that name. Those flocks were then in the vicinity of Badajos, and when confiscated, the two former

numbered about 5,000 each, and the two latter about 20,000 each; but they had been reduced, by being unceremoniously slaughtered for the use of the armies, to about 7,500 Paulars, 6,000 Negrettis, 4,000 Montarcos, and 3,000 Aguirres. Four thousand of the Paular flock were sent to the King of England, in compliance with the application of his minister and Gen. Downie, and I purchased the remainder. Sir Charles Stewart, the British minister, purchased the Negretti flock, of which I selected a small part, and the remainder he sent to England. I also purchased about 1,300 Aguirres, and selected about 200 Montarcos. I likewise purchased in Spain 200 of the Escurial flock from the mayoral, which were the only Escurials ever sent to this country. I shipped, in 1809 and 1810, about 3,850 to this country of the forementioned flocks, being all which I purchased in Spain, and which were distributed as follows: About 1,500 to New York, 1,000 to Boston and Newburyport, including 350 which I sent to be reserved for me; the remainder were sent to Philadelphia, Baltimore, Alexandria, Norfolk, and Richmond, and a small number to Wiscasset, Portland, and Portsmouth, as I was disposed to distribute these valuable animals to every State which would be likely to profit by their acquisition. Those I reserved for myself were composed of about half Paulars, a quarter Aguirres, and the other fourth of Escurials, Negrettis, and Montarcos, which I subsequently mixed together.

There were sent in the latter year (1810), by others, about 2,500, composed of Paulars, had of Gen. Downie, Montarcos, Aguirres, and Guadaloupes. Part of these went to New York, part to Boston. All those sheep were Leonesa Transhumantes, and were of the prime flocks of Spain.

I have been able to be thus minute in relation to the Merinos in 1809 and 1810, as I was then American consul at Lisbon, which was the port from which they were all shipped, it being only about 100 miles to Badajos, and the nearest seaport to that place.

In a letter to L. D. Gregory, Mr. Jarvis gives some additional particulars: That Gen. Downie was a Scotch officer in the British army, then holding rank in the Spanish service, and that the Paulars bought of him were sent to Scotland, with the exception of 200 or 300 he sold that came to the United States. The number of Paulars secured by Jarvis was 1,400. The Montarcos were bought by a Spaniard and a Portuguese, and about 2,700 were shipped to the United States. Jarvis shipped to the United States 1,400 Paulars, 1,700 Aguirres, 200 Escurials, 100 Negrettis, and about 200 Montarcos. Of this number about 100 were sent to Wiscasset and Portland, 1,100 to Boston and Newburyport, 1,500 to New York, 350 to Philadelphia, 250 to Baltimore, 100 to Alexandria, and 200 to Norfolk and Richmond. Besides those shipped on his account, Jarvis says there were about 300 Guadaloupes purchased by others, and 200 or 300 of the Paular flock sold to Gen. Downie, shipped to Boston; and of the Montarco flock, shipped by others, about 2,500 were sent to Boston, Providence, New York, Philadelphia, Baltimore, and Savannah. The Guadaloupes, Paulars, and Montarcos, which were shipped to Boston by others, were for the account of Gorham Parsons, Gen. Sumner, D. Tichenor, and E. H. Derby. All these sheep were shipped in the latter part of 1809, during 1810, and the early part of 1811, "and were," asserts Mr. Jarvis, "the only Leonesa Transhumantes, if we include Gen. Humphreys' and Chancellor Livingston's (which I have no doubt were of the same stock), that were ever shipped to the United States."

Mr. Jarvis says of the Paulars shipped to this country that they were undoubtedly one of the handsomest flocks in Spain. They were of middling height, round-bodied, well-spread, straight on the back, the neck of the bucks rising in a moderate curve from the withers to the setting-on of the head; their head handsome, with aquiline curve of the nose, with short, fine glossy hair on the face, and generally hair on the legs; the skin pretty smooth, that is, not rolling up or doubling about the neck and body, as in some other flocks; the crimp in the wool was not as short as in many other flocks; the wool was somewhat longer, but it was close and compact, and was soft and silky to the touch, and the surface was not so much covered with gum. This flock was originally owned by the Carthusian friars of Paular, who were the best agriculturists in Spain, and was sold by that order to the Prince of Peacé when he came into power. The Negretti flock were the tallest Merinos in Spain, but were not handsomely formed, being rather flat-sided, roach-back, and the neck inclining to sink down from the withers; the wool was somewhat shorter than the Paular and more crimped; the skin was more loose and inclined to double, and many of them were wooled on their faces and legs down to their hoofs. All the loose-skinned sheep had large dewlaps. The Aqueirres were short-legged, round, broad-bodied, with loose skins, and were more wooled about their faces and legs than any of the other flocks; the wool was more crimped than the Paular, and less than the Negretti, but was thick and soft. This flock formerly belonged to the Moors of Spain, and at their expulsion was bought by the family of Aguirres. The wool in England was known as the Muros flock, and was highly esteemed. All the bucks of these three flocks had large horns. The Escurials were about as tall as the Paulars, but not quite so round and broad, being in general rather more slight in their make; their wool was crimped, but not quite so thick as the Paular or the Negretti, nor were their skins so loose as the Negretti and Aguirres, nor had they so much wool on the face and legs. The Montarco bore a considerable resemblance to the Escurials. The Escurial flock had formerly belonged to the Crown, but when Philip II built the Escurial palace he gave it as a source of revenue to the friars, whom he placed in a convent that was attached to the palace. These four flocks were moderately gummed. The Guadaloupe flock was rather larger in the bone than the two preceding; about the same height, but not so handsomely formed; their wool was thick and crimped, their skin loose and doubling, their faces and legs not materially different from the two latter flocks, but in general they were more gummed than either of the other flocks. In point of fineness there was very little difference between these six flocks, and it is said by well-informed persons that there is very little difference in this respect among the Leonesa Transhumantes in general. The Escurials, the Montarces, and the Guadaloupes were not in general so heavy horned as the other three flocks, and about one in six of the bucks was without horns, or what is commonly called a polled buck.

There are some statements made by Mr. Jarvis which must be noted, one of which is, that he shipped Merino sheep to the United States in 1809. This must be an error; if true, no evidence of the fact has come to our knowledge. He is also much in error as to the number shipped by others in 1810, placing it at about 2,500, while, on the contrary, over 10,000 were shipped by others, mostly by Cochrane Johnston, Goold Bros. & Co., and Charles O'Neill at Lisbon, and by R. W. Meade and others at Cadiz. Cochrane Johnston, who had charge of 8,000 sheep, turned over to the British Government by the Spanish Junta, was permitted to purchase several thousand more on his own account, about 3,000 of which he sent to New York before the middle of December, 1810. They were mostly Aguirres. Mr. Jarvis left Lisbon in October, 1810, and Mr. Green, his consular clerk, who was left in charge of his office and his private business, wrote him December 14, 1810: "Almost every vessel bound for the United States since you left has carried sheep, so I suppose nearly 5,000 have gone and are going." Charles O'Neill had been a partner of Mr. Jarvis in his first venture and had sold out, after which he purchased and shipped on his own account.

Of the Negretti flock purchased by Sir Charles Stewart, and shipped to England as mentioned by Mr. Jarvis, some of their descendants found their way to Albion, Edwards County, Ill., in 1817, and we have this account of them given by their owner, George Flower, in 1841:

> Sir Charles Stewart, the English ambassador, purchased the royal flock. He shipped them after a hurried drive, scarcely out of reach of the pursuing enemy, some hundreds of miles. Six thousand only reached the shores of England, and after the lapse of a year 2,000 sheep survived. These were purchased by my father * * *. Some additions were afterwards made from the Paular and Escurial flocks. When I emigrated to this country, in 1817, I brought with me six of the finest animals of the wool-bearing species ever brought to this country. This is the origin of my flock; they have been kept on the same district and on the same farm, where I now reside, ever since. No deterioration of the wool has taken place; on the contrary, the wool fiber of them is somewhat finer. Eighty ewes, purchased at Lancaster, Ohio, formerly from the Steubenville flock, has been the only addition to the pure-bred stock. *

These were the first Merino sheep introduced into the State of Illinois.

The act of Congress of May 1, 1810, removing the embargo and opening trade, or at least permitting it to shift for itself, let loose from every seaport of the United States, from Maine to Georgia, nimble skippers carrying wheat, corn, flour, rye, barley, codfish, beef, bacon, beans, rice, pitch, and other stores for the powers then contending in the Spanish peninsula. Opportunely these skippers began to arrive at Lisbon and Cadiz at the time the Spanish cabañas were being sold. The cargo of flour, meat, and rice was landed and sold and the money invested in a cargo of Merino sheep and brought to the United States. As flour sold from $17 to $18 per barrel, corn $2 to $3 per bushel, and

* American Cultivator, Vol. x, 1841.

meat in proportion, the venture was a good one, but when to this was added the purchase of 100 to 200 sheep at from $10 to $50 each, and their sale in the United States at from $100 to $150 each, the profit on one trip was a fortune. Indeed, many merchants and sailing masters made profits on one cruise sufficient to pay all expenses, to pay for the vessel entire, and leave a comfortable surplus. Mr. Jarvis was one of the first to consign his sheep to parties in Boston, New York, Philadelphia, Alexandria, Baltimore, Norfolk, and Richmond, in which he was followed by Goold Bros. & Co., of Lisbon, and others. But the business was not done by two or three houses alone; every merchant at Lisbon and Cadiz that could do so bought sheep, and every skipper was an importer. Mates, supercargoes, and sailors were dealers. A seafaring man who had the confidence of his friends would load a vessel with supplies, make a quick trip across the Atlantic, drop anchor in the Tagus or Bay of Cadiz, sell his cargo, buy and load up with Merino sheep, and be back in a New England port in less than three months, with a fortune. It is not to be wondered at that the trade was an infectious one, and that at one time in January, 1811, over one hundred and forty sail of American vessels were at Lisbon port, with nearly a hundred more at Cadiz. Among the early arrivals at Cadiz, August 2, 1810, was a schooner, thirty-six days from Connecticut, with live oxen, claimed to be the first vessel which ever crossed the Atlantic Ocean with such a cargo.

Vessels with Merino sheep began to leave Lisbon and Cadiz in respectable numbers in July and August, and in September, 1810, there were thirty-eight arrivals at various ports in the United States from Boston in the North to Charleston in the South. They started singly and in company, and made the trip in an average of thirty-six days; some arrived in thirty days; some were never heard of after sailing. *James Murdoch*, sailing from Lisbon, dropped anchor at Philadelphia the same day that *Sally* made the port of New York, and *John L. Keias* arrived at Norfolk, on the same day that *Sally and Mary* arrived at Philadelphia. *James Wells* left Lisbon with the *Four Sisters;* they sailed in loving company all the way across the Atlantic, and came into New York harbor together on January 7, 1811. To chronicle the adventures of the vessels thus carrying on this trade, as told in their log books, would fill a volume, and one not altogether creditable to American statesmanship or apt to enhance American pride. At first the American sailor and shipper had nothing but the indifference of his own Government and the elements to contend with, but when his trade was at its highest English cruisers and French privateers put themselves across his course, stopped him, boarded his vessel, stole his stores and his sheep, robbed him of money and clothing, and then, in one case at least, burned and sunk his ship. It is humiliating, even at this late day, to read of these outrages. In some cases the captains report that after being overhauled and boarded they were treated "politely";

in others that their glasses were taken, their money chests broken into, the contents taken, and contributions levied. Ransom was sometimes paid for liberation, and that at a good round sum. The *Sachem*, bound for Baltimore, was shot at on September 10, 1810, boarded, robbed of provisions and a few sheep; the *Gideon*, bound for New York with 70 sheep for Miles Smith, at New Brunswick, N. J., was captured by a French privateer, robbed of provisions, and ransomed on payment of $6,000, on April 2, 1811. The New York Gazette, of April 3, 1811, says:

> Yesterday arrived at this port in the brig *Harriett*, from Lisbon, Capt. Malcolm and crew, of the brig *Sumner*, of Warren, from Liverpool to Lisbon, loaded with wheat, and Capt. Powers and crew, of the brig *Endeavor*, from Lisbon to Marblehead, with salt and 100 Merino sheep. These two vessels were captured by the French frigates *Renomme*, the *Nereide*, and *Clorinda*, all of 46 guns, from Brest for the Isle of France, and sunk. On the 22d of February these frigates boarded the *Harriett* and robbed Capt. Hurd of 46 sheep, all his stores, spyglasses, clothes, money, etc., and put on board of him the above American crews, and left the *Harriett* with 30 souls on board with only 3 barrels of bread and 3 of beef. Capts. Powers and Malcolm were also robbed of everything.

Even these indignities, robberies, and dangers did not deter the American sailor from his enterprise, and wheat, corn, rice, and pork were still crowded into the Lisbon and Cadiz markets, and Merino sheep, salt, and raisins brought back in turn. However, by the middle of April, 1811, the markets had been so well supplied that there was no sale for flour, and many vessels that cleared from Boston and New York for Lisbon and Cadiz were obliged to find a market elsewhere; indeed, some of them brought back their outward cargoes. Sheep, too, were more difficult to procure, and brought such low prices when landed that many vesels did not dare to deal in them, and came home in ballast or loaded with salt. Salt at all times was a favorite cargo, and nearly every vessel carrying sheep had also its complement of salt. The almost stereotyped note of arrival was such and such a vessel, so many days from Lisbon, with salt and Merino sheep, and when the shipping reporter felt facetiously inclined, he chronicled the latter as Merino passengers, Merino immigrants, or Spanish grandees.

There were some large arrivals in July, 1811, but four in August, and less in September. By our own researches in the public libraries, through files of Boston, Providence, New Haven, New York, Philadelphia, Baltimore, Charleston, Savannah, Washington, and other newspapers of that day, supplemented by the courtesy of the collectors of customs at the various ports of entry, we are enabled to give some particulars concerning the sheep shipped by the several parties from Portuguese and Spanish ports, which, though seemingly unimportant and certainly very dry, have much interest to some and mark a prominent point in the agricultural, industrial, and economic history of the United States.

Statement showing vessels arriving at different ports in the United States with Merino sheep September 1, 1810, to August 31, 1811, with name of vessel, from what port shipped, the number landed, number lost on the passage, by whom shipped, and to whom consigned.

Date.	Port of arrival.	Vessel.	Sailed from—	No. landed.	Lost on passage.	Shipped by—	Consigned to—
1810.							
Sept. 1	Philadelphia..	Transit ...	Ayamonte	200	.....	Capt. Chas. Stewart.	Capt. Chas. Stewart.
4	Norfolk.....	Woodrep Sims.	Lisbon ...	94	.....	William Jarvis .	Moses Myers & Sons.
5	Boston	Mary	Cadiz.....	7	.....	P. O'Conner	S. Ruggles.
5	New Bedford .	Traveler ..	Lisbon....	85	.....	William Jarvis ..	
7	New York....	Sally.....	....do	6	.....	....do.....	S. Hathaway.
7	Philadelphia..	James Murdock.	....do	42	.....	Goold Bros. & Co	J. M. Wallace.
7	....do	Bramin ...	Cadiz.....	30	.....	R. W. Meade	Joseph S. Lewis.
8	Gloucester....	Augusta..	Lisbon....	26	.....	Elias Davis	Fitz W. Sargent.
	Newburyport.	Dove.....	....do	160	.....	William Jarvis .	Jacob Little.
10	New London .	Orion	Cadiz	111	.....	.....	
11	Boston	Ontario ...	Lisbon....	60	.....	William Jarvis .	C. Coolidge & Co.
11	Norfolk.....	Greyhound	....do	120	.....	....do.....	Moses Myers & Sons.
12	....do	John L. Keias.	....do	35	.....	.....	
12	Newburyport.	Experiment.	....do	150	.....	William Jarvis..	Jacob Little.
12	Philadelphia .	Sally and Mary.	....do	220	.....	....do.....	Levi Hollingsworth & Sons.
12	New York....	Rose.....	Cadiz.....	30	.....	R. W. Meade	Wood & Skinner.
13	Philadelphia .	Alleghany	Ayamonte	160	.....	S. Singleton(master).	S. Singleton.
13	New York....	Adamant .	Lisbon....	180	40	William Jarvis..	Hicks, Jenkins & Co.
13	....do	Broker....	Cadiz.....	90	104	.....	Post, Grinnell & Co.
14	....do	Rockland .	Lisbon....	130	20	William Jarvis .	
14	Alexandria....	Martha ...	....do	10	.....	.....	N. Wattles & Co.
15	Baltimore	Greyhound	....do	2..5	15	Wm. Jarvis & Co	Smith & Buchanan
15	Boston	Gov. Sumner.	....do	57	.....	Goold Bros. & Co	Nehemiah Parsons
15	New York....	Caliope ...	....do	103	36	Wm. Jarvis & Co	Wm. R. Vigers.
16	Boston.....	Amelia	....do	30	.....	Goold Bros. & Co	John Clark.
17	....do	Belisarius	....do	252	46	Wm. Jarvis & Co	C. Coolidge & Co.
18	Philadelphia..	Cleopatra	Cadiz.....	11	.....	R. W. Meade	E. Carroll.
18	Alexandria.. .	Adeline...	Lisbon....	56	.....	Wm. Jarvis & Co	James H. Hooe and F. Dodge.
20	Boston.....	Minerva ..	....do	60	.....	Goold Bros. & Co	Ignatius Sargent.
20	Newport.....	.....	....do	74	.....	Wm. Jarvis & Co	Capt. Paul Cuffe and Isaac Cary.
20	....do	Wanderer	....do	206	.....	.....	J. Creighton, jr.
22	Boston.....	Henry	....do	92	10	Goold Bros. & Co	W. & T. N. Wood.
22	Norfolk.....	Union	....do	137	.....	.....	
24	Boston	America..	....do	141	.....	Wm. Jarvis & Co	J. F. Wood, Newall & Watson.
24	Baltimore	Sachem ...	....do	200	.....	Goold Bros. & Co	Washington Hall and R. Barry.
25	Charleston ...	A brig....	Cadiz.....	150	.....	.....	
30	New York....	Fortitude.	Lisbon....	212	.....	Wm. Jarvis & Co	W. R. Vigers and R. Leavenworth.
30	....do	Factor....	....do	202	154	.....	W. & S. Craig.
30	Providence ...	Nancy	Villa Real.	220	.....	Felix Merino....	Samuel Nightingale.
Oct. 3	New York....	Julia Ann	Lisbon....	74	.....	.....	N. L. & G. Griswold.
3	Norfolk.....	Happy Couple.	....do	16	.....	.....	Eugene Higgins.
5	Providence ...	Harriette	Gibraltar .	9	.....	Sam. C. Blodget .	Blodget & Power.
	Alexandria....	Brazilian .	Lisbon....	8	.....	Capt. F. Luckett	James H. Hooe and F. Luckett.
11	....do	Citizen	....do	76	.....	William Jarvis..	James H. Hooe.
				13	.....	Goold Bros. & Co	Bowie & Kurtz, Georgetown.
				17	.....	Ebenezer Dodge.	Ebenezer Dodge.
				2	.....	K. Silverthorn ..	K. Silverthorn.
15	Baltimore	Caroline ..	Lisbon....	40	.....	John Bulkely & Sons.	W. Patterson & Sons.
15	....do	John and Alice.	Cadiz.....	31	.....	R. W. Meade.	C. & S. Wirgman.
13	New York....	Traveler..	Lisbon....	125	.....	William Jarvis..	R. Crowningshield
16	....do	Cincinnati	....do	330	.....	.....	Leroy, Bayard & McEvers.
19	....do	Maria Theresa.	Cadiz.....	200	.....	.....	Isaac Clason.

Vessels arriving in the United States September 1, 1810, to August 31, 1811, etc.—Cont'd.

Date.	Port of arrival.	Vessel.	Sailed from—	No. landed.	Lost on passage.	Shipped by—	Consigned to—
1810.							
Oct. 20	Boston	Albert	Lisbon	100	9	Jonathan Allen	Jonathan Allen.
23	Philadelphia	Hope	do	120			James Yard.
25	New York	Columbia	do	36			T. Dexter, of R. I.
25	Boston	Regulator	Valencia	107	93	O. Rich	C. Hatch and J. W. Rich.
26	do	Dromo	Lisbon	100	30	Dan Rhodes, jr	Jonathan Allen.
27	New York	Lydia	Cadiz	130	149		Hall, Hall & Co.
29	Baltimore	Augustus	do	47	16		Appleton & Co.
31	New York	Purse	St. Sebastians.	150	140		John Jubel.
		Sumner	Lisbon	200			
Nov. 1	do	Edmund	do	94	48		Hall, Hall & Co.
2	do	Sumatra	do	179	76		Scoville N. Talcot, G. Robinson, and R. Dickey.
6	do	Laura	do	150	140		J. Lovett, A. Rnden, Wm. Colman, and G. and P. Havens.
6	do	Zephire	St. Sebastians.	96	54		John Jubel.
9	Philadelphia	Resolution	Teneriffe	13	71		
12	Boston	Robert	Lisbon	67		Wm. Ellott	William Story.
12	do	Sibac	Cadiz	25		J. Lord, jr	Nathaniel Curtis.
14	Newport	Eliza	do	29	55	R. W. Meade	Blodget & Powers.
15	New York	Sylph	Lisbon	100			R. Crowningshield.
15	do	Regulator	do	21			Green & Lovett.
16	do	Otho	Cadiz	180	300		A. Barker and I. Clason.
21	Boston	Constellation.	Lisbon	42		Wm. Jarvis & Co.	William Jarvis.
23	do	Alfred	do	100		do	Do.
23	Norfolk	Cephalus	Cadiz	32			
	New Haven	Elizabeth Little.		60			Prescott & Sherman, Norton & Bush.
24	Warren, R. I.	Warren	Lisbon	50		Samuel Kelley, master.	Samuel Kelley.
26	New York	Canton	do	300			W. Codman, W. R. Vigers, and A. & G. Thompson.
27	do	Taamasahasd.	do	16			Ingraham, Phœnix & Nixon.
27	do	Mount Hope.	do	610	450	E. H. Derby	E. H. Derby and W. Codman.
Dec. 1	do	Mary Ann	Corunna	30	20		Samuel Wetmore and others.
4	do	Concord	Gibraltar	59			J. F. Delaplaine.
4	Alexandria	Diara	Lisbon	20	15	William Jarvis	James H. Hooe.
4	Boston	Enterprise	Villa Real	76	24	John Smith	Brigham & Bigelow.
5	Gloucester	Fish Hawk	Lisbon	39		John Corliss	R. Elwell.
	Sag Harbor	Lady Hamilton.	do	30			
	Philadelphia	Little Cherub.	do	7	113		Thomas Ketland.
27	New Haven.	Ceres	Villa Real.	150	50		The captain, C. Peck, and F. Woodward.
29	Boston	Sally	Cadiz	14	186	James Odell	J. P. Kettle.
1811.							
Jan. 1	Philadelphia	Cumberland.	Lisbon	120			T. B. Freeman.
1	Charleston	Corporal Trim.	do	80			Joseph Winthrop.
1	Norfolk	La Chiena	Ayamonte	300	200		
2	do	Nenstra	Cadiz	105			
3	New Haven	Bellona	Lisbon	50		J. N. DeForrest (supercargo).	Abraham Heaton and others.
	Georgetown	Henry & Clermont.	do	10			
7	Baltimore	Industry	do	108			Thomas Tennant.
7	New York	James Wells.	do	125	145		W. Watkinson, Lawrence & Whitney.
7	do	Four Sisters.	do	120	180		John Murray & Sons.
8	do	Eliza Lane	do	151			John Murray & Sons, E. Stevens.
8	do	Gen. Colburn.	do	109	191		John Murray & Sons.

Vessels arriving in the United States September 1, 1810, to August 31, 1811, etc.—Cont'd.

Date.	Port of arrival.	Vessel.	Sailed from—	No. landed.	Lost on passage.	Shipped by—	Consigned to—
1811.							
Jan. 8	New York	Gen. Putnam.	Lisbon	115	89		John Murray & Sons.
8	Baltimore	London Packet.	do	263		Goold Bros. & Co	John Sherlock.
11	Marblehead	Hannah	Corunna	4		T. P. James (master).	Robert Hooper.
11	New York	Belisarius	Lisbon	206	64		John Murray & Sons.
11	Alexandria	Zeriah	do	50	150	Edward Grant	Lawrence & Fowle.
14	Boston	Greyhound	do	80	20	Goold Bros. & Co	Eben Parsons.
15	do	Polly and Betsy.	Valencia	40	160		
15	do	Ann	Lisbon	60	244		John Murray & Sons, W. Codman, W. Swan and A. Riker.
16	Norfolk	John and Adeline.	Cadiz	105?			Merchant & Ferebee.
16	Marblehead	Print	Lisbon	107	30	Goold Bros. & Co.	William Gray.
				75		William Jarvis	William Gray.
17	Boston	Eliza and Lydia.	do	55	32	A. Pratt, jr	Thomas Thaxter.
	Georgetown	Ann	do	120		Chas. O'Neill	
23	New York	Liberty	do	163	18		John Murray & Sons.
24	do	Asia	do	87	193		J. Barker.
26	Baltimore	Nimrod	do	22		Goold Bros. & Co.	
28	Charleston	Susan and William.	Cadiz	125			
31	North Yarmouth.	Orient	Lisbon				
Feb. 6	Alexandria	Hunter	Cadiz	47			John and Thompson Mason.
13	New York	Hibernia	Lisbon	5	10	Capt. Hays	Capt. Hays.
14	do	Henry	do	142	74		Lawrence & Whitney.
18	Boston	Telemachus.	do	80		Goold Bros. & Co.	Eben Parsons.
24	New York	Orion	Cadiz	35	40		J. D. Miller, G. S. Munford, and Capt. Howland.
27	do	Triton	do	108	52		G. C. Howland and Peter Harmony.
Mar. 3	do	Julius Cæsar.	Lisbon				R. Crowninghield, Burling & Swan.
5	Alexandria	Martha	do	19			George Taylor.
6	Philadelphia	Republican.	do	88	56		Thomas Ketland.
	Charleston	Fidelia		118	104		
10	New York	Thomas	Lisbon	68			William Codman.
10	do	Amazon	Ayamonte	140			Smith & Hubbell.
10	Baltimore	Scioto	Lisbon	32	68	William Jarvis	Smith & Buchanan.
11	New York	Pocahontas	do	135	15		R. Crowninghield.
11	do	Fox	do	35	93		W. Osborn and R. C. Smith.
14	do	Atlantic	do	100	51		A. Cranston & Co., D. Hadden, T. H. Merry, and to order.
15	do	Chelsea	Madeira	92	58		John Murray & Sons.
17	Baltimore	Madeira	Cadiz	300		Moses Abbott	Jacob Adams.
20	Philadelphia	Volunteer.	Lisbon	70			
21	New York	Betsy	do	80	20		Taylor & Hamilton.
22	do	Lucy and Elizabeth.	do				Carpenter & Fowler.
22	do	Edmund	do	135	45		Hall, Hall & Co., and D. Hadden.
24	do	Washington.	do	85	115		W. Codman and D. Hadden.
25	do	Rhoda and Betsy.	do	250	30		John Murray & Sons.
27	do	Flower of the Tagus.	do	400			John Murray & Sons; Leroy, Bayard & McEvers.
27	do	Union	do	43	7		James Robertson.
27	Baltimore	Theresa	Madeira	26		Andrew Smith	John Sherlock, C. & P. Wirgman.

Vessels arriving in the United States September 1, 1810, to August 31, 1811, etc.—Cont'd.

Date.	Port of arrival.	Vessel.	Sailed from—	No. landed.	Lost on passage.	Shipped by—	Consigned to—
1811.							
Mar. 28	Boston	Traveler	Teneriffe	44	.....	Madan Bros	Thomas Thaxter.
Apr. 2	New York	Maria	Cadiz	.....	.....	.....	Ripley, Center & Co.
2	....do	Harriett	Lisbon	64	58	.....	N. L. & G. Griswold.
3	....do	Gideon	....do	70	8	.....	Miles Smith.
4	Philadelphia	Thomas Ketland.	Cadiz	170	.....	.....	Thomas Ketland.
5	....do	Amiable	....do	.....	200	.....	Do.
11	....do	Bramin	Madeira	500	4	.....	Joseph S. Lewis; Mordecai and Sam. Lewis; Benj. B. Howell & Co.
12	New York	Mentor	....do	41	27	.....	Jenkins & Havens; March & Benson.
17	....do	Solon	Lisbon	146	27	.....	Post & Minturn.
17	....do	Cornelia	....do	293	37	.....	N. L. & G. Griswold; E. Leavenworth, Strong & Havens.
22	Philadelphia	William Penn.	....do	.....	.....	.....	Thomas Ketland.
23	....do	John C. Stocker.	....do	.....	.....	.....	
25	New York	Edward	....do	78	22	.....	Abram Barker.
May 13	Baltimore	Hannah	Teneriffe	.....	.....	.....	
16	Savannah	Eagle	Lisbon	25	.....	.....	James Johnson, Oliver Sturges, and A. Richards & Co.
16	New York	Charles	....do	.....	.....	.....	Capt. Field.
25	Boston	Latona	....do	128	23	Wm. Jarvis & Co., Jones & Co.	I. Thorndike.
20	....do	Ruth	St. Ubes	5	.....	E. Snow	E. Snow.
29	Philadelphia	Kensington.	Lisbon	.....	.....	.....	Eyre & Massey.
29	Norfolk	John and Mary.	....do	105?	.....	.....	
31	Savannah	Florida	....do	219	.....	.....	George Scott.
31	Boston	Samuel	....do	8	.....	.....	Henry Paine.
June 1	Providence	Charlotte	....do	50	.....	Bulkley, Alcock & Oxenford.	Brown & Ives.
21	Boston	Venus	....do	54	.....	Eben Clapp	J. Penniman and E. Clapp.
29	Philadelphia	Fair American.	Cadiz	.....	.....	.....	Brinton & Barton.
29	Boston	Augusta	St. Ubes	9	.....	.....	Jonathan Buffington.
July 1	New York	Felix	Lisbon	.....	.....	.....	J. & E. Lyman.
2	....do	Eliza Barker.	....do	10	.....	.....	J. Barker and the captain.
2	....do	Maria	....do	220	.....	.....	N. L. & G. Griswold, E. Leavenworth, and A. Cranston & Co.
10	Philadelphia	Mars	....do	120	.....	.....	James McMurtrie and Jonathan Worth.
15	Charleston	Corporal Trim.	Rivadeo	90	195	.....	Joseph Winthrop.
17	Philadelphia	Gen. Eaton	Lisbon	5	35	.....	
18	New York	Calcutta	....do	210	150	.....	Hicks, Jenkins & Co.
20	Boston	Morning Star.	Farro	200	20	Elisha Ayer	D. Nickerson, Elisha Ayer.
23	New Haven	Huldah and Maria.	Lisbon	24	.....	Levi Goodrich	L. Goodrich and J. M. Deforrest.
Aug. 10	Alexandria	Sybil	....do	.....	.....	.....	
20	Providence	Mern	....do	36	.....	.....	B. & T. C. Hoppin.
27	Philadelphia	Reaper	....do	273	.....	.....	
31	Newport	Paulina	Cadiz	6	.....	Benjamin Gray	Benjamin Gray of Little Compton, master of the vessel.
				17,693	5,924		

The inaccessibility of some of the custom-house records, the defective condition and total destruction of others, prevents a complete history of these shipments, but this schedule shows that various parties were shipping, and that the consignments were widely distributed. It will be observed that in most of the cases the loss on the passage is not given, which, as a general rule, was 5 per cent. Others exceeded this, for many of them loaded with sheep affected with claveau or sheep-pox lost heavily. The *Broker* lost 104 out of 194, the *Factor* 154 out of 356, the *Lydia* 149 out of 279, the *Purse* 140 out of 200, the *Laura* the same, the *Otho* 300 out of 480, the *Sally* 186 out of 200, the *Gen. Colburn* 191 out of 300, the *Ann* 244 out of 304, the *Fox* 93 out of 128, and so on in greater or lesser proportion.

The *Sumner* left Lisbon in the latter part of September with 200 sheep. Her arrival is nowhere recorded, yet that she did arrive is evident from the fact that her loss is not mentioned, and that a letter coming by her, elsewhere given, arrived at its destination.

The total number of vessels arriving from September 1, 1810, to August 31, 1811, as shown by this statement, was 180 vessels, 168 of which landed 17,693 sheep, and lost 5,924 on the passage. These are the figures as given, but it must be borne in mind that in some cases the total number given as landed is too high, including, as it does, the number lost, the report making no allowance for the latter and stating the entire number shipped. Twelve vessels are without the number shipped. Allowing that these landed the average number carried by the 168, which was 105, would add 1,260 to the total landed, making an aggregate of 18,953 sheep. Add to this number the 698 given in the preceding totals as arriving in 1810, prior to September 1, and we have 19,651 Merino sheep arriving in the United States from April 1, 1810, to August 31, 1811. The number shipped from Spain and Portugal probably reached 26,000.

Number of vessels arriving at different ports in the United States from Spain and Portugal from September 1, 1810, to August 31, 1811, with Merino sheep, and the number of sheep.

Port.	Vessels.	Sheep.	Port.	Vessels.	Sheep.
North Yarmouth, Me	1	*105	New York	67	†8,695
Boston	28	2,033	Philadelphia	22	‡2,569
New Bedford	1	85	Baltimore	12	§1,379
Gloucester	2	65	Alexandria	9	§423
Newburyport	2	310	Georgetown	2	139
Marblehead	2	186	Norfolk	10	1,949
Newport	3	109	Charleston	5	563
Providence	4	315	Savannah	2	244
Warren	1	59	Unknown	1	200
New London	1	111			
New Haven	4	284	Total	180	18,953
Sag Harbor	1	30			

* Estimated. † Five cargoes estimated. ‡ Four cargoes estimated. § One cargo estimated.

The one vessel arriving at North Yarmouth, Me., January 31, 1811, has left no record of the number of sheep she landed, nor does it appear

to whom they were consigned. Neither does it appear that any other vessel of our list cleared for a Maine port, all the consignments being entered at Boston. The *America*, which landed at Boston September 24, 1810, had 141 sheep. Twenty-seven of these were delivered to J. F. Wood, at Wiscasset, and 31 to Messrs. Newall & Watson, at Portland. Those sent to Mr. Wood were sold late in the season, and brought low prices, Mr. Wood being the principal purchaser. Some of those sent to Newall & Watson died shortly after being put ashore, and none were sold until the next spring, at which time only 17 of them remained alive, but 6 lambs had come meanwhile. They were moved elsewhere, and probably added to the flock that Mr. Jarvis finally took to Weathersfield, Vt.

Either from the small number sold by Mr. Wood and those brought by the *Orient*, or by purchases made in Boston, Governor Hunton, John Davis, Dr. Hubbard, Gen. Chandler, and Judge Lincoln, all of Maine, were supplied with the Merino sheep in 1810 and 1811, most of them in 1810. These were the first Merino sheep introduced into Maine.

Twenty-eight vessels, with 2,033 sheep, landed at Boston. Most of these were consigned to those who sold them at private sale or reserved them for their own use. The earliest public sales were by C. Coolidge & Co., who offered 200 at auction on September 27, 1810. These were Paulars, shipped by Jarvis on the *Ontario* and *Belisarius*, and the average price received was about $124 each. Another sale by the same party of 107 realized $13,671, an average of $128 each. Coolidge & Co. made many complaints to Mr. Jarvis that his consignment of sheep to different parties prevented them from keeping up the prices, which they could do if they were given a monopoly. Private sales made early in September realized $110 for each sheep. These low prices, compared to those of March and April, when $500 to $1,500 was given for a single sheep, are attributed to the great increase in the number arriving, nearly every seaport from Boston to Charleston having its arrival of Merino immigrants. On October 4 John Clark sold 30 sheep imported by him in the *Amelia*, 9 Negretti rams and 21 Paular ewes, and on the 10th W. & T. N. Wood offered at private sale "25 Merino rams, all that remain of 92 Paulars in the *Henry*, landed only sixteen days since." On the 11th Coolidge & Co. sold 10 rams and 30 ewes, Paulars shipped by Jarvis, and on the 21st C. Hayward, auctioneer, offered 65 Merino sheep—26 rams, 24 ewes, and 15 lambs—"purchased of the monks of the Convent of St. Carlos in Estremadura." The same auctioneer advertised on the 10th, 13 black Merino rams, "selected from the best flocks in Spain." The prices realized in these October sales were a little higher than those of September. The purchasers were farmers of Massachusetts and Vermont, and the sheep found their way into nearly every county of Massachusetts and into many of those of Vermont and New Hampshire. From a purchase made by a gentleman at these sales in September, 1810, we have this information. His purchase consisted of 5

full-blood ewes and 1 ram (Paular) just landed from Spain. In 1812 the fleeces of the 5 ewes weighed 25 pounds 4 ounces; in 1813 the 5 fleeces weighed 29 pounds 12 ounces, and in 1814 they weighed 32 pounds 2 ounces, or over 25 per cent improvement in two years, one of the most striking cases of the early records.

Of the arrivals at Boston from November 1, 1810, until September, 1811, not much is known of note. The sheep as they came in were soon disposed of and transported to various parts of New England; and they were of all kinds, Paulars, Montarcos, Negrettis, and Aguirres.

The cargo of the *Henry*, landed September 22, 1810, and of the *Sumner*, of the 15th, were Paulars purchased of Col. Downie by Goold Bros. & Co.; 40 of those imported by Jonathan Allen, October 20, 1810, were sold to go to Pittsfield, Mass.

The 85 Paulars landed at New Bedford September 5, 1810, found slow sale at that place. A few small lots were disposed of and the residue sent elsewhere, 7 rams and 33 ewes being sold at auction in New York, November 3.

The 65 sheep landed at Gloucester, 27 for Fitz W. Sargent, owner of the vessel on which they came, and shipped by Elias Davis from Lisbon, and the 39 shipped by John Corliss to Robert Elwell, were all disposed of to farmers in the vicinity of Gloucester.

Of the 310 sheep arriving at Newburyport, shipped by Jarvis and consigned to Jacob Little, 13 were sold by Mr. Little for $2,312.50, an average of $177.85 each; 4 were disposed of at lower prices, and 274 were delivered to the agents of Mr. Jarvis; some of them were sent to New York and sold, 22 Paular ewes and 2 Paular rams by James Seton on October 17, and by P. H. Schenck, who, on October 29, offered 1 Paular buck and 7 Paular and Aguirres ewes just reshipped from Newburyport. But few died, an evidence that they were healthier sheep than others arriving at that time, or that they had better care; perhaps the latter, for with one of the vessels came a shepherd, also his dog, which gave the newspapers of the day an opportunity to announce the arrival of a full-blooded Spanish Merino shepherd!

Of the 182 sheep landed at Marblehead for William Gray, a large commission and shipping merchant of Boston, and the 4 for Robert Hooper, we have no record beyond the facts already presented in the shipping schedule. Between September 1, 1810, and August 31, 1811, but three vessels are on record as arriving at Newport, R. I., with sheep, the *Eliza*, from Cadiz, with 29 Infantados, shipped by Richard W. Meade to Blodget & Power, and the *Paulina*, with 6 Infantados brought from Cadiz by the captain, Benjamin Gray, and taken to his home, Little Compton. We have no further record of these two importations.

On September 7, 1810, Capt. Paul Cuffe and Isaac Cory inserted an advertisement in the Newport and Providence papers offering for sale at auction, on September 21, 1810, at the farm of David Buffum, in Newport, R. I., "74 Merino rams and ewes, warranted of the pure

Merino breed, shipped by William Jarvis, American consul at Lisbon." As these sheep were shipped from Lisbon before Jarvis purchased any Aguirres, it may be assumed that all, or nearly all, were Paulars. It is barely possible, though not probable, that a few may have been Viadillos, or the unknown variety purchased in connection with Gilman, O'Neill, and Coolidge & Co. Capt. Cuffe was master of a vessel, one of those to whom Jarvis sold sheep, and of whom Coolidge & Co. complained that they were carrying so many sheep that they depressed the prices. Chapman says: "Some of the older citizens of Newport remember Capt. Cuffe as a sea captain of tall, commanding appearance, who came to the meeting of the Friends when in port; and they also remember that he was generally accredited with importing into Newport from Spain Merino sheep, from which the flocks of David Buffum, William Bailey, and others, principally sprung, though there is a probability that blood from the Humphreys importation may have been also introduced into some of the flocks at Newport." October 18, 1810, David Buffum offered for sale 60 full-blooded Merino sheep.

Of the four arrivals at Providence, aggregating 315 sheep, but little can be added to the facts already given in the table. On January 21, 1811, Messrs. Blodget & Power advertised for sale 65 rams and ewes, full-blooded Transhumantes, shipped by William Jarvis from Lisbon, and notice was given that as the original cost, expenses, and average loss on the passage, exceeded the price then obtainable, of course the importations must cease or the price enhance. Nothing is known as to the cargo arriving November 24, 1810, at Warren, R. I. The 111 sheep by the *Orion* from Cadiz, which arrived at New London, Conn., September 10, 1810, were undoubtedly part of those purchased by Mr. Hall from the Duke de Infantado, and it is believed that they were sent to Mr. Hall's home at Pomfret.

During the period under consideration four vessels, carrying 284 Merino sheep, landed their cargoes at New Haven, Conn. The first was the schooner *Elizabeth Little*, sailing by way of Turks Island and New York. The sheep were noted on their arrival, about the middle of November, 1810, as "60 genuine Merino sheep, selected from the best flocks in Spain," and they were offered for sale by Prescott & Sherman and Norton & Bush, to whom they were consigned. They were sold at auction November 30, but we have no record of the purchasers and prices.

The next arrival was the brig *Ceres*, Capt. William Fairchild, from Villa Real, Spain, in forty-five days, with 150 Merino sheep consigned to F. Woodward, C. Peck, and the captain. Upon the day of their arrival, December 27, 1810, 78 of these sheep were advertised to be sold at auction January 9, 1811, by Joel Atwater, auctioneer. The advertisement reads:

> These sheep were selected from the Duke Infantado's flock of 1,500 by a person who went from this country for the purpose, and are said by judges to be superior to any that have been imported.

The issues of the Connecticut Journal of January 10, 17, 24, and February 7, 1811, contain an advertisement by Capt. William Fairchild of "60 full-blooded Merino sheep selected from the Duke Infantado's flock, imported in the brig *Ceres*, Capt. William Fairchild, direct from Spain, to be sold at private sale. Inquire of the subscriber, in Wooster street."

These sheep were undoubtedly a part of the purchase made by Charles Henry Hall of the Duke de Infantado, of which, as he says, he sent a part to New York and Philadelphia. Mr. Hall's letter regarding this purchase was published in 1844, and is here partially given:

The Duke del Infantado, it is true, joined the patriot cause, and went ambassador to England from the Cortes at the time Ferdinand was detained in France, and returned to Cadiz, when that city was in a state of siege. There I was introduced to the duke by the United States ambassador, Mr. Erving. His flocks, he informed me, were in positions of safety from the contending armies in various parts of Spain, some of them in Andalusia. The result of my interview was a purchase from the duke of a flock of 400 sheep by myself and associates, which were shipped to Virginia, consigned to Messrs. Brown & Rives, at Richmond. Subsequently there were obtained from the duke 2,000 more sheep having this mark (a brand of V upon the side of the face of the sheep) which were shipped to New York and Philadelphia for account of Commodore Charles Stewart, Consul Richard Hackley, myself, and others. Of one of the cargoes Chancellor Livingston had a large lot of my Infantado sheep which he purchased of my agent, Mr. Henry Ward, and I think in some of his writings he speaks of the high estimation in which he held the flocks of the above-named duke.

In noting the large importation of Infantado sheep from Spain during 1810 and 1811, and commenting upon this letter of Mr. Hall's, Albert Chapman makes these remarks:

Some things in this letter are corroborated by other circumstances. H. Ward is given as one of the consigners of Merino sheep that arrived at New York on board the *Maria Theresa* from Cadiz and thirty-eight days from Villa Real, Spain. She arrived October 19, 1810. The brand on the face of the sheep is the same as was upon the sheep imported into New Haven in 1810, as described by Jacob N. Blakeslee, a more full account of which we shall publish hereafter. Another coincidence is that both vessels sailed from Villa Real, not from Lisbon, where most of the confiscated flocks—perhaps all—were shipped.

And Mr. Chapman concludes by admitting that there are several reasons for believing that the importation by the *Ceres* was from the Infantado stock, and probably a part of the purchase described by Mr. Hall. The account as given by Mr. Blakeslee, referred to by Mr. Chapman, may here be produced, as stated by Prof. W. H. Brewer, of New Haven, in 1868 or 1870:

There were two importations into New Haven. In 1810 an importation by Peck & Atwater, of New Haven. In 1811 another by Abraham Heaton & Co., John De Forrest supercargo. Merino sheep fell in price about that time. These were sold at auction, at least some of them were. I saw all the sheep of both these importations. Both had the same brand on the nose, a V or ⋎, fork upwards; no hair where the mark was put on. I was then told that this was the Infantado brand. Capt. Peck told me that they were the best flock in Spain, and were called the Infan-

tados. When the Heaton importation was sold there was one particular ram that I wanted. He was unlike the others; he had a peculiar fleece. Several wanted him. He was sold when some of us were away getting something to eat. Daniel Bacon, of Woodbury, got him. I afterwards got two rams of his get, but I never owned that identical ram.

We have introduced this statement of Mr. Blakeslee to show, by cumulative facts, that the sheep imported by the *Ceres* were Infantados, but Mr. Blakeslee was in error in that part of his statement where he said that the Heaton importation had also the Infantado brand, for that importation was from Lisbon and consisted of Guadaloupes and Negrettis.

The Heaton importation here spoken of consisted of 30 Guadaloupes and 12 Negrettis shipped from Lisbon by one of Heaton's agents. Mr. Heaton says that the sheep were smuggled into Portugal, and that he knew that one-half of them were of the Guadaloupe breed, "considered in Spain superior to any other breed of sheep raised there," and, continues Mr. Heaton, "there has not been any breed of sheep imported that compared with the Guadaloupe breed." The sheep came on the *Bellona* and arrived at New York December 31, 1810, forty-two days from Lisbon, consigned to J. & E. Townsend, and thence the vessel sailed to New Haven, where it arrived January 3, 1811. At New York the number of sheep reported was 50; at New Haven, 42, consigned to Abraham Heaton and others. The following advertisement will explain from whence they came and some other particulars. It is from the Connecticut Journal of January 10, 1811:

> To be sold at auction, in this city (New Haven), on the 17th instant, January 1811), 42 Merino sheep, imported in the brig *Bellona*, from Lisbon. Thirty of these sheep are the improved breed; the most unquestionable documents accompany them, proving them to be of unmixed race of Leonese Merinos, of the flock termed Guadaloupe. They were purchased of the prior of the royal monastery of Guadaloupe, in Spain, and warranted genuine. * * * The remaining 12 are of the Negretti breed, with certificates attesting their genuineness.

The sale was well attended and much anxiety was shown for the possession of a remarkable ram, so remarkable, indeed, that Mr. Heaton, writing in 1864, said of him: "His size and form were so superior I almost see him standing before me now. His fleece was uncommonly large, and admitted to be finer than any other wool that had been seen in this country." This Guadaloupe ram was sold to Daniel Bacon for $350 or $275, after a sharp competition. In Mr. Bacon's hands he became celebrated as a very superior stock ram, and afterwards obtained a wide notoriety as the improver of many flocks. Subsequently Mr. Bacon sold this ram to W. R. Lampson for $1,300, and he added his blood to the Atwood strain of Merinos.

From the Infantado importation by the *Ceres* and the Guadaloupe and Negretti importation by the *Bellona* sprung the flock of Jacob N. Blakeslee, and some others in Connecticut. Some of both importations he took upon shares, some from Mr. Peck and Mr. Woodward,

consignees of the *Ceres*, and some from Joel Atwater, the auctioneer of both lots. Peck & Atwater bought a part of the cargo of the *Bellona*, but never imported any sheep.

The 24 sheep bought by Levi Goodrich in Lisbon and landed at New Haven by the *Huldah* and *Maria*, on July 23, 1811, must have been disposed of at private sale, of which no record has appeared.

Sixty-seven vessels, carrying nearly one half of the Merinos imported into the country, about this time, landed their cargoes at the port of New York. As far as can be ascertained the number landed was 8,695. This varies but little, if any, from the exact number. Many of these sheep were consigned to private parties, by whom they had been ordered before shipment, and no knowledge of them is attainable beyond the time when they cleared the vessel's deck, but of some we have indistinct traces which we will follow.

The first vessel to arrive in September, 1810, was the *Sally*, with 6 sheep, consigned to S. Hathaway. These sheep were from Lisbon, said to have been purchased of Jarvis, and were sold at auction September 21 as Segovian sheep, "young and handsome, and belonging to the flock of the Bishop de Castro."

On the 22d of September the cargoes of the *Rockland* and the *Caliope* were sold at the country seat of Francis B. Winthrop, at Horne's Neck, N. Y. James Seton was the auctioneer, and he disposed of 215 Paulars, Negrettis, and Aguirres. Many were present, and the whole flock was sold for $57,000, averaging $265 each. One ram brought $910. Among the purchasers were Chancellor Livingston, John B. Church, the Crugers, Morgan Lewis, Mr. Johnson, and many other gentlemen of wealth and spirit.

On October 1 James Seton sold 2 full-blooded Merino rams imported in the *Wanderer*, and on the 3d Tripler, Shotwell & Co. sold at auction, at Brooklyn, 35 Paulars and Aguirres. This was succeeded by a sale at Brooklyn, on the 5th, of the cargo of the *Fortitude*, Paulars and Negrettis. These sheep were advertised as full-blooded, "in great health and good order, imported in the ship *Fortitude*, Capt. Griffith, from Lisbon." One hundred and fifty sheep were sold at these prices:

52 rams	$18,324.80
98 ewes	22,104.88
150 total of the flock	40,429.68
Highest ram	830.00
Lowest ram	100.00
Highest ewe	325.00
Lowest ewe	60.00
Average price of rams	352.40
Average price of ewes	225.56
Average price of whole flock	269.52

On October 9 another sale took place at Brooklyn of 70 Paulars, arrived on the *Julia Ann* from Lisbon; and on the same day and place, by the same auctioneer, there were sold "55 rams from Estramadura in

finest order and good wool, from Cadiz, and equal to the Merino breed." The prices realized at these sales were but a shade lower than those of the 5th, above given. Of the cargo of the *Factor*, consigned to W. & S. Craig, these gentlemen offered at auction, October 15, 180 rams of the Negretti and ewes of Paular flocks. The prices were well maintained, and the sheep were spoken of as being in good condition and equal, if not superior, to any in the market. Two hundred and fifty sheep were put up at auction on October 31, by Mr. Dunham, but 35 rams and 6 ewes only were sold; the highest priced ram was $250; the lowest, $90; the highest priced ewe was $140; the lowest was $60. The average price of the rams was $121 each, that of the ewes $128.65 each.

Of the sheep brought by the *Cincinnati*, Hoofman & Glass, on November 2, "offered at the seat of Gen. Depeyster, at Harlem Heights, 8 miles from New York, 90 real Transhumante ewes and rams from the flock of Count de Montarco, just from Lisbon. They are the property of a house of first respectability in Lisbon, and who have been concerned in the purchase and sale of a very great proportion of the real Merinos imported into the United States from Portugal." Eighty sheep of the same flock were sold at the seat of Peter Stuyvesant the next day, and two days thereafter 80 Paulars, belonging to Mr. Jarvis, reshipped from Newburyport, were offered for sale at Stuyvesant's place. We have no record of the sales beyond the advertisements.

On November 13 Wetmore & Jackson sold for G. Haven 80 Paular and Negretti sheep "from the flock of the Marshal Beresford, well known in Europe." These were sold in front of the New York custom-house. They were a part of the cargo of the *Laura*. On the 17th John Jubel offered for sale 130 Negrettis and Paulars, by the *Purse*, from St. Sebastians, and on the same day E. & A. Townsend offered 27 sheep, by the *Laura*, from Lisbon; also 17 sacks of Merino wool.

The cargo of the *Concord* from Gibraltar—16 rams and 43 ewes—was offered at private sale on the day of arrival. That of the *Canton* from Lisbon, owned by different parties, was sold on different days. Wetmore & Jackson offered 75 on December 5, W. R. Vigers offered 170 on the 6th, and again on 15th Wetmore & Jackson offered 70, the property of A. G. Thompson. On the 12th, James Seton sold 9 Infantados imported in the ship *Otho*.

Another arrival of Infantados was that of the *Maria Theresa*, October 19, 1810, with 200 consigned to Isaac Clason, owner of the vessel, and to H. Ward, the agent of Charles Henry Hall, by whom they were shipped. This was a part of the purchase from the Duke de Infantado.

There were nine arrivals during the month of January, 1811, but only three recorded sales. James Seton on the 12th offered 90 Merino ewes just from Lisbon, pure Guadaloupe sheep; on the 13th offered 40 by the *James Wells;* and again on the 16th offered 60 rams and ewes from the flock of the Count del Campo. The prices realized were low and discouraging. Seven of the nine vessels arriving this month had their

cargoes, wholly or in part, consigned to John Murray & Sons. These gentlemen refrained from forcing the market and kept the sheep consigned to them until spring.

There were no sales in February. On March 22, James Seton offered 11 rams and 51 ewes, imported from Lisbon in the *Thomas*, and on the 28th 40 Merino rams imported on the *Atlantic*.

The largest sale in New York was that of John Murray & Sons. Over 1,700 sheep were consigned to them, and they began to come in when prices were low, and unfortunately many of them were diseased. They were not forced on the market but kept over winter, notice being given on February 13, 1811, that sales at auction would commence on March 4 of several flocks of the best breeds in Spain. The sale continued for some days, but the prices did not rule high.

The cargo of the *Traveller*, which arrived on October 16, 1810, consigned to Richard Crowningshield, consisted of Montarcos which were offered for sale March 30, 1811, and at the same time there was offered the cargo of the *Pocahontas*, which arrived March 11. These sheep were described as young, "of large frame, very handsomely marked, fine close fleece, and of the Guadaloupe flocks which are much admired for the closeness of their fleece."

Some of the first importations into New York early found their way to Albany, where, in September, 1810, there was a sale of 1 ram for $900, another at $450, 1 ram and 2 ewes at $1,400, and 1 ram and 3 ewes at $1,100.

Not all the sheep advertised from November to March were sold on the stated days, and small lots were constantly disposed of at private sale, or in the custom-house yard, at auction. March was a clearing up month, no less than fourteen entire cargoes being disposed of with remnants of other importations.

On April 5 James Seton offered for sale 400 Merino sheep of the Montarco flock, imported by the *Mount Hope* in the preceding November. This cargo of 1,060 sheep was purchased by Gen. E. H. Derby, of Charles O'Neill, at Lisbon. Four hundred and fifty died on the passage and many more after being landed. The sale was but partially successful. Some of the sheep were sold at low prices, and the remainder taken to Connecticut and Massachusetts. The 70 Merino sheep by the *Gideon*, consigned to Miles Smith, were taken to that gentleman's place on the Raritan River, opposite New Brunswick, N. J. Mr. Smith was a neighbor of Capt. Farmer, the breeder of Leicester sheep, mentioned in a preceding chapter, and with whom Mr. Smith divided his purchase. Both gentlemen bred from the importation many years and disposed of the product in the central counties of New Jersey.

The Montarcos, arriving by the *Harriett* on April 2, were sold at Bull's Head by James Seton on the 11th. On the 15th Wetmore & Jackson sold 24 rams and 90 ewes imported on the *Amazon* from Villa Real, by Smith & Hubbell. On the 26th James Seton offered for sale at P. Stuy-

vesant's, 2 miles from New York, 100 ewes and 100 bucks, Negretti, Guadaloupe, and Montarcos, from Lisbon in the ship *Cornelia*.

Of the twenty-two arrivals at Philadelphia, with about 2,500, the first was the *Transit* from Ayamonte, near Cadiz, carrying 200 Infantado sheep. Capt. Edward Meade was master of the vessel and Capt. Charles Stewart, U. S. Navy, was a passenger and part owner of the sheep. The sheep were part of the purchase made by Charles Henry Hall of the Duke de Infantado, elsewhere noted. They were offered at private sale and were advertised as having been "selected with the greatest care from the Duke de Infantado's flock of 30,000 on the mountains of Sierra Morena, the best in Spain." Failing to dispose of them at private sale, Freeman & Passmore offered 150 at auction, on September 20. This sale was unsuccessful; was postponed from time to time, and again the sheep were on private sale, but few being disposed of at the close of the year.

On September 7, Freeman & Passmore advertised that 57 full-blooded Merinos had just landed (by the *James Murdoch*, probably), selected from one of the finest flocks in Spain, and that they would be offered for sale on the 12th. They were not all sold, and on the 19th 50, including some of another lot, were again offered without reserve and sold at very low figures. As a commentary on the slow sales and low prices at this time it may be stated that a Philadelphia paper asserts, at a later day, that when the Merinos were first offered for sale near Philadelphia their merits were so unknown or overlooked that their lambs were sold to the butchers for lack of other purchasers, though the sheep were then offered at moderate prices.

The Jarvis shipments to Philadelphia were consigned to Levi Hollingsworth & Sons. The first arrival was the *Sally and Mary*, September 12, with 200 sheep. The largest purchaser was James Caldwell, of New Jersey, for his farm at Haddonfield. At this sale he bought 190 sheep for $28,500, or $150 each, and at another sale made purchases amounting to $3,000. Of these sheep we find notice the following year. The first meeting of the "Merino Society of the United States," of which Mr. Caldwell was president, was held at his farm at Haddonfield, on October 5, 1811, and was largely attended by members, farmers, proprietors, and manufacturers. Between 200 and 300 full-blooded Merinos in the finest order, both of fleece and flesh, were shown, "their appearance proving, beyond all controversy, that the soil, climate, and food of Jersey are congenial with the health and excellence of this inestimable animal. A large number of those examined were, when purchased from the importers, feeble, pining, and more or less diseased, but the whole flock was completely recruited."

The account then goes on to a comparison with the descendants of the Muller ram and the Humphrey ewes:

> And it is certain that Mr. Caldwell, in all his enterprising purchases from the late importations of Spanish sheep, has never met with any equal in appearance, fineness

of fleece, and length of pile to those of his own raising from his original flock. About 100 lambs have been the produce of this year, nearly all of which have been so far reared without accident or distemper.

It is not probable that Mr. Caldwell took the whole of his purchase to his farm, for on September 22 he advertised for sale 70 Merino rams and ewes, "fine-wooled, full-blooded Transhumantes, of the Paular and Aguirres breed. They were of the flocks of the Prince of Peace and purchased at the sales ordered by the Junta of Estremadura, by William Jarvis, at Lisbon, whence they have just arrived by the bark *Sally and Mary.*"

These sheep did not go off at private sale, and on October 4 they were offered at auction, and the following incentive held out to those who still hesitated:

From the last accounts from Lisbon the prospects of further importation of full-blooded Merinos are at an end, consequently this appears likely to be the only opportunity of procuring such as are deemed of importance, there being a part only of the *Transit's* cargo remaining in this State, and which are held by judges of Merinos to be the only two original full-blooded lately imported accompanied by proper vouchers.

Jarvis said that he sent about 350 sheep to Philadelphia, and Chapman, who had access to his papers, thinks that nearly or quite that number were consigned to Hollingsworth & Sons, the last cargo arriving September 20, 1810, and in consequence of large arrivals found a low market. As we find no record of any such arrival we accept Mr. Chapman's account:

There were 140 shipped, but a number died on the passage and more soon after. December 24, following, only 118 were left. They were in bad condition and diseased when they arrived. In January, 1811, Michael Kippley offered $50 each for the whole flock. May 13 they were offered Judge Griffith, of New Jersey, for $60 each. May 14 they were offered at $45 each for the entire lot. May 20 Messrs. Young, Dupont, and Warner offered to take the lot on shares. We have been unable to ascertain the final disposition of these sheep. The last letters discuss the question of sending them to New York by sea or overland, as was ordered or proposed by Mr. Jarvis, but there is no light upon the final disposition of them.

Mr. Chapman also notes that in addition to the large sale made to Mr. Caldwell, that gentleman, Mr. Warner, and others bought $5,900 worth with no numbers given, and that at another sale 14 were disposed of at $75 each.

On October 26, 1810, James Yard, commission merchant, offered for sale "120 Merino sheep just landed from the ship *Hope* from Lisbon, from the noted flocks of Paular, Negretti, and Aguirres." They were not immediately sold and were put up at auction by Peter Kuhn & Son on November 14 following.

The arrivals at this port now fell off, but 13 sheep arriving in November and but 7 or less in December. The latter came in the *Little Cherub*, of which the New York Gazette, December 11, 1810, says:

Arrived, the brig *Little Cherub*, fifty-four days from Villa Real, with 7 out of 120

Merino sheep bound to Philadelphia, in distress, owned by Thomas Ketland. November 24, while lying in the Gulph, shipped a sea which swept her waistboards, stanchcons, both boats, and cleared her decks.

Whether she reached Philadelphia from New York with the 7 sheep we do not know.

The next cargo of sheep arriving at Philadelphia was in the *Cumberland*, from Lisbon. She arrived January 1, 1811, with 120 sheep consigned to T. B. Freeman, and on the 3d they were offered at private sale, accompanied by documents showing that they were from the royal flock, from the prior of the royal monastery of Guadaloupe. But few were disposed of at private sale, and on the 23d Freeman & Passmore announced that 60 would be put up at auction on the 29th.

On the 13th of April Freeman & Passmore offered for sale 170 full-blooded Merinos, just landed from the *Thomas Ketland*, then to be seen on the Jersey shore, at Bispham's Ferry. They were sold at auction on the 20th. They were from Cadiz. A consort of the *Thomas Ketland* was not so fortunate as to land her cargo. The *Amiable*, owned by Thomas Ketland, after landing a cargo of flour and meat at Cadiz, took on board as part of her return cargo 200 Merino sheep. She sailed from Cadiz for Philadelphia, was overtaken by a storm, lost her 200 sheep, put in at St. Bartholomew in distress, whence she made her way to Philadelphia, arriving April 5.

On April 11 Joseph S. Lewis & Co. and Benjamin B Howell & Co. offered for sale the cargo of the ship *Bramin*, Capt. Singleton, from Ayamonte, consisting of 500 Merino sheep, selected by a competent judge from the best flocks of Spain. Only 4 were lost by death on the passage, which fact was adduced as proof of their condition; whereas in many cases one-half and three fourths had died on the passage. The flock was on the farm of Samuel L. Howell, near Cooper's Ferry, New Jersey, and as sales were slow it was brought up to Philadelphia, and on May 11 put up at public sale, without reserve, on very liberal terms as to time of payment. No record of the purchasers of these sheep or the prices paid for them is preserved; the papers of the day abounded in political discussions, heavy explanations of public and semi-public men, and column after column of European news, but very little of domestic interest of any kind, and they ended their interest in Merino sheep when the advertisement was inserted and paid for. We learn, however, from these same advertising columns that hay in bales, suitable for Merino sheep, was on the market; that persons of experience in sheep shearing offered to shear the Merinos on reasonable terms, and that the domestic wool from the Merino was offered to manufacturers, also 10,000 pounds of Merino wool from Lisbon, brought over with sheep, salt, corks, and wine. One glimpse, however, we get in a letter from a farmer to the Luzerne Agricultural Society:

These animals, though so little known in Pennsylvania, have maintained a price far beyond what was expected by their most sanguine advocates, insomuch that it is evident a desire to possess them has even preceded a knowledge of their value.

From the first of May to the last of August, 1811, there were five arrivals at Philadelphia of vessels carrying sheep, but of only one of which have we any information, except the record of arrival. This was of the *Reaper*, which arrived August 27, with a recorded cargo of 273 sheep. On August 31 Freeman & Passmore advertised for sale on September 18, 280 full-blooded Merino rams and ewes, with documents to prove that they were from the best flocks of Spain. This is the last reported sale in Philadelphia for that year.

The sheep imported into Philadelphia brought diseases with them; some became diseased after their arrival. Especially was this the case with many that had not received proper care during the winter of 1810–'11. They were attacked with what the doctors of that day called sheep-pneumonia, and were treated as were human beings, by bleeding and purging, which was pronounced very successful. They purged the sheep with molasses and yeast, and bled the animal by opening a vein near the articulation of the lower jaw.

Among the many purchasers of Jarvis' sheep at the Philadelphia and Baltimore sales was John Warner, of Wilmington, Del., whose flock was sold soon after his death in 1814. It then consisted of nearly 400 full bloods and half-bloods selected from the best importations.

Of the 220 shipped by Jarvis to Gen. Smith, of Baltimore, 35 rams and 170 ewes, 205 in all, were sold at auction on October 8, 1810, at Montebello, the country seat of Gen. Smith, near Baltimore. The net proceeds of the sale was $22,159.69, or an average of $108 each. They were Paulars and Aguirres, and were advertised as "being part of the flocks of the Prince of Peace, purchased by him of the Carthusian friars."

Two days before this, on October 6, another sale took place at Canton, near Baltimore, of "a choice parcel of fine Leonesa Paular race of Merino sheep, 60 rams and 140 ewes, imported from Lisbon in the *Sachem*, Capt. Stevens." These were guaranteed by a chain of documents by Marquis Romana, Col. Downie, and Consul Jarvis. They were a part of those purchased from Col. Downie by Goold Bros. & Co., and consigned to Hall & Barry. All were not disposed of at this sale, and Mr. John Barry offered the residue at private sale.

On November 16, C. O. Muller advertised for sale at the seat of the late Capt. William Robinson, about 1 mile from Baltimore, 28 rams and 12 ewes, full-blooded Merinos, from the upper part of Estremadura. We know nothing of the previous history of these sheep, but believe them to have been imported directly by their former owner, Capt. Robinson.

The shipments of 40 by the *Caroline* to William Patterson & Sons, and of 31 Infantados by Richard W. Meade to C. and C. Wirgman seem to have been absorbed by private demands, for there is no further note of them, nor of the unknown shipment to Appleton & Company. On April 17, 1811, Thomas Tennant offered at public sale 6 rams, 52 ewes,

and 9 lambs, part of the cargo of the *Industry*, selected by a gentleman of Lisbon from the best flocks of Spain. The sale was not successful, but 12 being disposed of. He then offered them at private sale in lots of 1 ram and 8 ewes each.

On the same day and at the same place, Gilman & Sons offered at auction a part of the cargo of the *London Packet*, arriving three months before. The sheep were described as "a choice parcel of true and unmixed breed of Leonesa Guadaloupe." They were disposed of at low prices and in small lots, mostly to farmers of the adjacent country. On April 13, Thomas Chase sold 2 rams and 30 ewes, being part of the cargo of the *Nimrod*, which arrived from Lisbon in March. They were shipped by Goold Bros. & Co., and advertised as Guadaloupes. Of the cargoes arriving from Cadiz by the *Madeira* and *Hannah*, 9 rams, 80 ewes, and 8 lambs were sold at auction by Henry Thompson on April 9, 1811, who represented them as genuine Merino sheep selected by R. S. Hackley. They were undoubtedly of the Infantado purchase. The 32 sheep arriving by the *Scioto*, March 10, 1811, were Montarcos.

Nine vessels landed 318 sheep at Alexandria, the cargo of one of them being unknown. The greater part of these were consigned to James H. Hooe, a commission and shipping merchant. The cargo of the *Adeline* (14 rams and 42 ewes) was sold October 8. They were from Jarvis and advertised as selected by him from his true "Leonesa Paulars," and were accompanied by the certificates of the Marquis of Romaña and others, who conducted the sale on the part of the Spanish Junta. The next sale made by Mr. Hooe, and his largest one, was at his farm, Burgundy, near Alexandria, on November 3, when he sold to George Fitch, for $10,864.11, 18 rams and 83 ewes shipped by Jarvis and others on the *Citizen*. These sheep were advertised as Paulars, and were, when sold, reshipped to New York, where they arrived November 13, consigned to Kelso & Crump. Two of the sheep by the *Citizen*, shipped by and consigned to K. Sebastian, were taken to the eastern shore of Maryland. The sale of November 3 was succeeded one week later by one of 8 large Merinos, purchased by Capt. Luckett, at Lisbon, and brought by him on his vessel, the *Brazilian*, early in October. These were fine selected Paulars and brought good prices. The next sale was on January 12, 1811, when Mr. Hooe offered 6 rams and 14 ewes, being the cargo of the *Diana*, which arrived December 4, 1810. They were advertised as of the Paular, Negretti, and Escurial breeds, just received from Mr. Jarvis at Lisbon. Seventeen were sold for $1,250, and later the other 3, 1 ram and 2 ewes, were sold for $300.

The *Ziriah*, with 50 sheep purchased by Edward Grant, of Goold Bros. & Co., arrived early in January, 1811, and on the 7th of the month John G. Ladd advertised 1 ram and 2 ewes of the cargo, and on January 26 Lawrenson & Fowle inserted an advertisement in the Alexandria Gazette that on February 9 2 rams and 30 ewes, selected by a gentleman at Lisbon from a flock of 800 Transhumantes, would

be sold at auction at Broomlawn. The sale was not very successful, for many of the sheep were diseased.

The next sale at Alexandria was a part of the cargo of the *Hunter*, which arrived February 6, 1811, bringing 47 Infantados from Cadiz. John Mason and Thompson Mason reserved some of these for their own farms, and the disposition of the remainder is told in this advertisement of Robert Patton, jr., auctioneer, in the Alexandria Gazette of February 14, 1811:

> For sale, on the 20th of this month, 11 rams and 13 ewes, with 6 young lambs, of the real Merino breed, imported in the brig *Hunter*, Capt. Johnston, from Cadiz, being part of the flock of his excellency the Duke d' Infantado, as certified by Don Antoni Maino, corregidor of Gibraltar; and which sheep were obtained from the interior by Richard S. Hackley, esq., American consul at Cadiz, and particularly selected, being part of the flock imported by Gen. John and Thompson Mason in the brig *Hunter*.

We have no further record of these sheep, unless it be in the advertisement of Jacob Morgan, of Alexandria, April 25, 1811, who offered for sale 5 rams and 15 ewes shipped by Richard S. Hackley, American consul at Cadiz, Spain. As no arrivals are reported from Cadiz succeeding that of the *Hunter*, it is presumed that these sheep are a part of her shipment. It is also probable that of this importation Dr. Increase Matthews, of Putnam, Ohio, bought an Infantado ram and 2 ewes June 13, 1811, and had them taken in a wagon from Alexandria to his farm in Ohio, where he kept up a pure flock until about 1850.

On June 5, 1811, Mr. Hooe offered at public sale 60 to 70 Merino sheep, principally ewes of the best breeds in Spain, Paulars and Aguirres, shipped some months ago by Jarvis, "and are now in good order, and their fleeces remarkably fine." A few of these were sheep that had been diseased and kept over winter; some of them were brought from Richmond the latter part of March, which Myers & Co. had been unable to dispose of at that place. They were not sold on June 5, and the sale was postponed to the 24th, at which time we lose trace of them.

The Merinos (Infantados) imported by the Masons, as also those offered for sale by Mr. Morgan, both lots shipped by Richard S. Hackley, American consul at Cadiz, were undoubtedly a part of those spoken of by Charles Henry Hall in his letter already quoted, as being purchased of the Duke de Infantado.

There were two arrivals at Georgetown, D. C., the *Henry and Clermont*, carrying 19 sheep, and the *Ann* with 120, both from Lisbon. The *Henry and Clermont* arrived early in January, 1811, and on the 19th Robert Parrott offered 14 ewes, 1 ram, and 4 lambs, "selected out of a flock of some thousands bought by one of the houses of Goold Bros. & Co., of the prior of the royal monastery of Guadaloupe and conducted to Lisbon by Manuel Larin, their mayoral or chief shepherd." The *Ann's* cargo consisted of Montarcos shipped by Charles O'Neil. On

April 13, 1811, Robert Ober, of Georgetown, advertised for sale at auction, "at the sheep shearing in this town, 20 to 30 full-blooded Merino rams arrived from Lisbon, exported by Torlades & Co., of the Count de Morlaires' flock; among them are Royal Escurial and Paular."

It is impossible to give accurately the number of sheep arriving at Norfolk, the customs records for the period having been destroyed during the war of the rebellion. Ten vessels are reported as having entered there, seven of which landed 734 sheep. Allowing the other three to have carried on an average the same as the seven whose numbers are given (105), the total number would foot up about 1,050. For the reason just given, it is impossible to give in all cases the parties shipping the sheep or to whom consigned.

Of the 94 arriving by the *Woodrop Sims*, September 4, 1810, 70—19 rams and 51 ewes—were advertised on the 5th, and quite freely afterwards, but the sales were slow, and they were offered at auction on October 2. The sale was unsuccessful, and again they were held at private sale. One ram and 5 ewes were sold to a gentleman in South Carolina for $750, and on October 10 $100 each was offered for 40. Many died, and sales stopped. The shipment was made by Jarvis and consigned to Moses Myers & Son. All subsequent shipments to Norfolk were equally unfortunate. The large number arriving, their poor condition, falling prices, no sales, and the need of great care, with poor results from their best efforts, were very depressing, and Myers & Son wrote to Mr. Jarvis January 20, 1811, that they could "see no prospect of success, more having arrived, and we look for a ship which has more on board to our address. Heaven knows what will become of them." Late in January 32 were sent to J. Roddey & Co., Charleston, S. C., arriving February 1. In February the weather was such as had not been experienced for years. Sixteen died, and the remainder were put into a house where a fire protected them from the cold. In March there were 78 survivors, but during that month the dogs destroyed 18 in one night. On March 12 20 were shipped to Messrs. Smith & Buchanan at Baltimore. April 19 only 35 sheep and 4 lambs survived. "Never," said Myers & Son to Jarvis, "have we had a more unpleasant consignment. We were never more anxious than for your order to ship the residue; they perplex us much."

Of the sheep consigned to Myers & Son at Norfolk, some were sent to M. & B. Myers, at Richmond. The first were those arriving by the *Greyhound*, Capt. Baxter, September 11, 1810. These were advertised by Samuel Myers on the 20th, as "114 Merino sheep shipped by Jarvis," Negretti, Paulars, and Aguirres. They had no sale and were put up at auction October 3, and for want of bidders the sale was indefinitely postponed. They were placed on the farm of Robert Temple, near Richmond, and on January 17, 1811, were again put up at auction "at Ampthill, seat of Robert Temple." There were 5 Paular, 3 Negretti, and 2 Aguirres rams, and 15 Paular and 58 Aguirres ewes,

together with their lambs, 12 in number. The purity of the sheep was guaranteed by Jarvis. The sale was not successful, only 18 being disposed of—a Paular ram, 3 Paular and 2 Aguirres ewes being sold to A. B. Venable, president of the Virginia Bank, for $1,200, and 2 rams, 8 ewes, and 2 lambs to other parties for $862. The Merinos did not seem to be appreciated and the business was dull, the sheep badly diseased upon their arrival, and the consignees apparently ignorant of the care and management of them. Of the remainder of these Richmond sheep, 1 Paular and 1 Negretti ram, 2 Paular and 14 Negretti ewes were shipped to New York, March 22, 1811; and 5 rams, 43 ewes, and 14 lambs to Mr. Hooe, at Alexandria, where they were offered for sale June 5, and again on June 24.

We have given the number of arrivals at Charleston as five vessels, with 563 sheep. The first was a brig, which arrived September 25, 1810, with 150 sheep from Cadiz. As the records of the Charleston custom-house were destroyed during the war of the rebellion we are unable to say to whom they were consigned. The papers of that day are silent on the subject, nor do they contain any advertisement concerning them. The *Corporal Trim*, arriving January 1, 1811, brought 80 sheep from Lisbon consigned to Joseph Winthrop. Several of these were killed by dogs a few days after their arrival, and the others were sold at private sale. Of the 125 by the *Susan and William*, from Cadiz, we have no record, and our knowledge of the cargo of the *Fidelia* is fragmentary. All that is certain is, that on March 6, 1811, the *Fidelia*, bound to Charleston, put in at Philadelphia in distress, having on board 118 sheep; she had lost 104. Why she should have put in at an inland port is strange, unless she was owned there. There is no subsequent record of her cargo. It is possible that the sheep were unloaded and disposed of at Philadelphia, although there is no evidence of that fact. The *Corporal Trim* arrived on July 15, 1811, with 90 consigned to Joseph Winthrop, which were disposed of at private sale. An arrival not included in the schedule as given was that of 32 sheep from Norfolk on February 1, 1811, consigned to J. Roddey & Co.

The first recorded arrival of the Merinos at any point south of Charleston was on November 15, 1810, when Marquand, Paulding & Co., of Savannah, Ga., offered for sale "four Merino rams of first breeds (any trifling reports to the contrary notwithstanding) just arrived from Estremadura, via New York." The prices realized were low. In the Savannah Republican of January 31, 1811, appears the following:

NEW YORK, *January 21, 1811.*

The ship *Ann*, late from Lisbon, brought out, consigned to Lawrence & Whitney, 3 Merino rams of extraordinary beauty, size, and fine fleece. They are of the Escurial breed, and were selected from a very large flock at an expense of six times the extraordinary price of Merino sheep. We understand they are pronounced by persons well acquainted with the animals to be the most valuable Merino rams ever imported into this country.

A few days after this, February 11, 1 ram and 1 ewe, described as Escurials and warranted full-blooded, were advertised at Savannah as just received from New York and for sale. There is no further record of them, but it is scarcely probable that they were Escurials.

The sheep consigned to James Johnson, Oliver Sturgess, and A. Richards & Co., arriving at Savannah by the *Eagle* on May 16, 1811, were advertised in the Savannah papers for some time and sold slowly. Two hundred and nineteen, consigned to George Scott, arrived on May 31, and on June 4 Mr. Scott advertised for sale 40 rams and 100 ewes of the Escurial and Negretti breeds, and added that if not sold by July 1 they would be sent northward. Some were sold at very low prices, and on June 14 10 rams and 30 ewes were put up at auction. Mr. Scott did not dispose of all his sheep, and late in July shipped the remainder to Adams & Wood, Boston, Mass.

The importations of 1810 and 1811 gave the United States nearly 20,000 Merino sheep, some of the choicest of Spain, in addition to those descended from the previous importations of Dupont, Adams, Livingston, Humphreys, Mease, and Muller, and it is reasonable to believe that with few exceptions they were pure-blooded, for as stated elsewhere all restrictions on their exportation had been removed. There was no great difficulty in obtaining them; the best breeds could be purchased by any one so choosing as readily as those of inferior quality, and as thousands were being slaughtered and eaten by the armies operating in Spain and Portugal it is reasonable to suppose that they could be bought cheap from those who were compelled to withdraw into the restricted military lines around Lisbon and Cadiz. There were, however, reasons personal and political why certain parties and some men of commanding influence discouraged the importation of these sheep and sought to give them a bad name, coinciding very nearly in expression with some English papers of 1809 and 1810, in deriding our infant manufactures and our Merino sheep.

The hostile attitude of England in 1811, and the breaking out of hostilities in 1812, checked further importation, and but few Merinos were imported from Spain to the United States. Some there were, but not of sufficient importance to note. Two, however, from the variety of the cargo in one vessel and the prices realized for the sheep in the other we give. On April 19, 1814, a Portuguese ship arrived at Boston with an assorted cargo of Merino wool, salt, raisins, currants, hardware, teas, Jesuit's bark, etc., and 44 Merino sheep—36 had been lost on the passage. At a sale of Merino sheep at Boston, May 26, 1814, just imported in the *Don Quixote* from Lisbon, 30 full-blooded Escurial rams and 200 full-blooded Escurial ewes and 4 ram lambs brought not less than $100 each and most of them $150 each.

There was but little or no incentive to make importations after 1814, and the close of the war with England, the collapse of the manufacturing interest, and the low prices to which the Merinos fell, and the fact

that the descendants of the earlier importations were better than any then to be had in Spain, forbidding it.

From Maine to Georgia on the Atlantic coast, and into all the interior States and Territories east of the Mississippi, with the possible exception of Alabama, Indiana, and Illinois, the Merino sheep had been carried by the beginning of 1815, and beyond the Mississippi it had made its appearance as early as August, 1811, a St. Louis paper of that time announcing that "this valuable animal is already introduced into upper Louisiana, where it promises to flourish in great perfection." And from Maine to Georgia and in all the interior States advertisements of full-bloods, half-bloods, and all degrees of purity, evinced their general dissemination and the active trade in them.

CHAPTER IV.

THE DISSEMINATION OF THE SPANISH MERINO THROUGHOUT NEW ENGLAND—THE PROGRESS OF THE FINE-WOOL INDUSTRY AND ITS DECLINE.

The dissemination of the Merino sheep throughout the United States was not uniform in its character, nor was it universally encouraged. There was, at first, a very general prejudice against them. The first importations of Seth Adams, Dupont, Chancellor Livingston, and Col. Humphreys attracted but little attention, and that mostly of an unfavorable character. It was only when the necessity of our infant manufactures required fine wool that Merino sheep began to be appreciated, and then in different degree by different sections of the country. New England was given up to commerce; the Middle States to commerce and agriculture; the South solely to agriculture. When the East saw its commerce destroyed by foreign powers and the indifference, if not hostility, of its own General Government, it turned its attention to manufactures, and from sheer necessity to the improvement of its wool, hence it welcomed the advent of the Merino sheep. The Middle States saw in these sheep the improvement of their agriculture and an aid to manufactures. The South was not committed to the improved sheep; cotton was its great staple and manufactures but slightly favored. We propose to note the introduction of these sheep into the various States east of the Mississippi River, the formation and history of some of the early and most noted breeding flocks, and the progress of the fine wool industry, beginning with the New England States.

MASSACHUSETTS.

The first flock of Merino sheep that was founded in the United States was by Seth Adams, at Dorchester, Mass., in 1801, the foundation being a single pair imported from France in October of that year. Mr. Adams bred some pure bloods from this pair and some crosses on the common sheep. In 1807 he removed to Muskingum County, Ohio, taking 20 to 30 sheep with him, and bred pure, selling to various parties in Ohio and Kentucky. No sheep of the State now trace a pedigree to his flock, and as far as known no flock of his blood was left in Massachusetts after his removal, although half-blood and other grades were.

About 1803 or 1804 some of the Humphreys sheep were taken from Connecticut into Franklin County, Mass., and bred pure in direct blood, by Capt. David Dennison, of Colerain, as late as 1860, and these sheep preserved their excellence at least until 1857, for at that time five ewes were shown at the annual fair and were allowed "a gratuity of a volume of the Report of the Commissioner of Patents." A premium was withheld because the rules required a pen of six sheep to be shown, and Capt. Dennison paraded but five. Many flocks of the best sheep of Massachusetts derived their blood from the Dennison flock.

In 1807 Elkanah Watson purchased some Merinos from Chancellor Livingston and began the formation of a flock at Pittsfield, Berkshire County, which he thought by 1810 would number 1,500, including crosses. He also made purchases of Humphreys and Livingston in 1808 and 1809, and formed a good, pure-blood flock, from which he distributed rams and ewes over the entire county to improve the native sheep. Mr. Watson's breeding was an incident of his woolen manufacture. He embarked in the making of woolen goods and sought to grow and encourage the growth of the raw material at the doors of his factory. His breeding flock for this purpose was kept up until Berkshire County was changed from a coarse-wool district to a fine-wool one, until her beautiful hills were covered with valuable flocks and the population so completely absorbed in growing wool and manufacturing it that other branches of industry were practically abandoned.

About the time that Mr. Watson began the foundation of his flock and the operations in his factory the Berkshire Reporter, in a leading article, called attention to the great importance of the Merino sheep, especially to the intimate and vital relation they bore to the manufacturing interest and the prosperity of the country. Says the article:

> From this point of view and under a certainty that every pound of wool of the Spanish-mixed breed will bring into the country, direct or indirect, at least $1, and if manufactured into cloths or hats double that sum, it would be well for every thinking farmer to calculate how much his own interest and the substantial wealth of the country could be advanced in a few years should the increase of our flocks and the quality of our wool be universally pursued as a first object.

An agricultural society was proposed for the county, represented by two members from each town, chosen in town meetings, to assemble once in each quarter, the object being the promotion of agriculture in general; and as a first object to procure, if possible, for each town one or two Spanish rams at the expense of the town and to prevent monopoly by individuals. As raising sheep would require fewer hands than the plow, an accession of hands would be gained for manufacturing, and all females and children would find abundant employment at all seasons, which would also have a good effect on the morals of the community by checking dissipation and inculcating habits of industry. These suggestions had their fruition in the Pittsfield cattle show, one of the most successful of its kind in the United States, and the model on which

most of them were subsequently formed, barring a few peculiarities exclusively New England in their character. The initial movement had for its foundation two Merino sheep. Mr. Watson, who had moved from Albany, N. Y., to Pittsfield in the spring of 1807, says:

In the fall of 1807 I procured the first pair of Merino sheep that had appeared in Berkshire County, if not in the State. They were the first I had ever seen; although defective in the grade I was led to expect, yet, as all who examined their wool were delighted with its texture and fineness, I was induced to notify an exhibition under the great elm tree in the public square in Pittsfield of these two sheep on a certain day. Many farmers, and even women, were excited by curiosity to attend this first novel and humble exhibition. It was by this lucky accident I reasoned thus: If two animals are capable of exciting so much attention, what would be the effect on a larger scale with larger animals? The farmers present responded to my remarks with approbation. We became acquainted by this little incident, and from that moment to the present agricultural societies, cattle shows, and all in connection therewith have predominated in my mind, greatly to the injury of my private affairs.

As early as 1807 the Shakers at Hancock raised Merino sheep from rams of Humphreys flock, and with one-third and one-half bloods made excellent blue broadcloth.

A zealous and intelligent breeder of Merino sheep was Col. James Shepherd, of Northampton. In 1810 he bought 1 ram and 11 ewes of Col. Humphreys, which he bred pure for many years, forming an excellent flock. In 1822 he added to his flock a pair of Saxonies, the first of the kind imported into the United States.

The earlier importations of Adams, Livingston, and Humphreys had well established the Merino in the State before the larger importations of 1810–'11, but they did not attract much attention. The necessities of the country drew public attention to the later importations, and the Merino sheep was then welcomed as a great acquisition and had an early introduction into politics. The production of cotton in the South was shaping the politics of the country and its industrial system. The Merino sheep was hailed as the foundation of a manufacturing industry in the States and welcomed by some as an offset to the growing power of cotton. A few papers of the extreme type enlarged upon this subject, but a quotation from one must suffice:

The introduction of this most valuable animal promises great and permanent benefits to our country, especially to the Eastern States. The Middle and Southern States, from their more bounteous soil and climate, have sources of wealth which we do not possess. True patriotism and true wisdom, which always coöperate together, dictate to us to place our competition with our sister States on means which nature and habit have put in our power, and to make the most of these means. Our hilly country is peculiarly adapted for sheep. The enterprise, frugality, and persevering industry of the inhabitants of New England constitute a complication of powerful machinery, competent, when well directed upon what it operates, to produce the greatest and most beneficial results. The providential acquisition of this inestimable animal, one of the greatest blessings which has grown out of the evils of the present times, is in every point of view worthy the attention of all classes of citizens, especially farmers. The golden fleece of the Merino sheep presents to every prudent and thrifty farmer a mine of wealth from which he may draw, in proportion

to his industry, economy, and the extent of his means. All hands, male and female, may participate in the honor and profit of the acquisition; and the independent farmers and planters of the eastern sections of the Union, if true to their own interest, in that liberal and enlightened competition which virtue and freedom most approve, will find no occasion to envy the planter of the Southern States.*

If other papers and many public men were more guarded in expression they were not less zealous at heart, and gave public utterance to the thought that even had the character of the nation depreciated, as many thought it had, it had acquired in the years from 1806 to 1810 immense resources and wealth. To say nothing of the numerous manufactures of woolen, cotton, and almost every fabric formerly imported from abroad, daily starting up in every part of the Union, but more particularly in Massachusetts, Connecticut, New York, and Pennsylvania, the acquisition of the Merino sheep itself was an invaluable national treasure, because, with the spirit then developing for improving the land and manufacturing wool, it would be the foundation of a valuable branch of agriculture, and the bond between the farmer and manufacturer by the pursuit of which both would prosper.

In the introduction and distribution of the Merino throughout Massachusetts no encouragement was received from the State. The legislature, controlled in great measure by the mercantile interests, did not take kindly to them, and were not favorable to the manufacturing interests then awakening in the State; so the credit for the propagation of this valuable animal belongs to private enterprise and the encouragement of the Massachusetts Agricultural Society. This society had awarded premiums to Seth Adams and Col. Humphreys, had a standing offer for the production of the greatest amount of wool to the carcass, and in 1809, offered "to the person or persons who shall import into this Commonwealth, directly from the Kingdom of Spain, the first five rams of the Merino breed the sum of $50 each; and for the first 10 ewes of the same breed the sum of $25 each." In the proceedings for 1809 were printed Lord Somerville's history of the Merino sheep, and two letters of Col. Humphreys.

The first ram brought into the State under the offer of the society was by Capt. Bartlett, of Plymouth, in the summer of 1809, the next four by Capt. Knap, of Newburyport, and the 10 ewes by Cornelius Coolidge. Importations followed in quick succession, among them one of Jonathan Allen, of Pittsfield, who went to Lisbon and purchased 100 Montarcos, which he took into Berkshire County during November, 1810. The dissemination of the Merino throughout the State was quite general, and many flocks were formed and increased in size until the failure of manufactures in 1815 and 1816, when entire flocks were devoted to the knife, and apparently for no other reason than that they would persist in eating, even though their fleece was not readily saleable. Many seemed to have embarked in the business of raising them with

* Boston Patriot, October 3, 1810.

the idea that large flocks could be crowded into and maintained upon small fields, without turnips or other winter food, and then produce $8 or $10 worth of wool each. But when peace came and prices fell and experience had shown that the Merino would eat, he was denounced for his destruction of grass lands and his voracity. His owner became disgusted with him because he did not know how to manage him, and sacrificed him as rashly as he had bought him.

In reviewing this period of Merino sheep husbandry in Massachusetts, Mr. J. Lowell, at the first annual meeting of the Brighton Cattle Show, in 1816, says:

> There probably never existed, in the history of nations, a people who were so liable to push their national or accidental advantages as far as the people of the United States. The state of our commerce, restricted alike by other nations, and the policy now happily abandoned by our Government, favored the natural propensity of our citizens to extend their speculations in the fine-wooled sheep to an extreme which bordered on rashness, may we not say on delirium? The counteraction produced by recent political events unforeseen, by the absurd manner in which this admirable breed of sheep were attempted to be preternaturally forced into abundance, by the want of skill and experience, most obviously distinguished, has threatened the destruction of one of the greatest blessings of this nature which our country ever enjoyed. It is only necessary for sober and thinking men to recollect what was the state of our flocks prior to the introduction of the Merino race. That it was impracticable for our manufacturers to rival any one nation in Europe in the finer fabrics, and it will soon be seen that this fine-wooled breed was absolutely necessary to our success as a manufacturing people. Great as the sacrifices have been, they are far below the real value to the nation, and we have the pleasure, the patriotic gratification on reflecting that the loss has not been a national one. It has been between ourselves; what one lost a more prudent citizen gained.

In Massachusetts, as elsewhere, an argument urged by some against the Merino sheep was its inferiority as an article of food. This reason was combated by its supporters as being without foundation, its flesh being described, when properly treated, as very juicy and toothsome. However, this discussion was dropped when its superiority as a wool-producer was apparent. When its wool was unsalable the discussion was renewed, and among those who stepped forward to stem the tide that was rapidly consigning these sheep to destruction as absolutely worthless was Gorham Parsons. Mr. Parsons owned a fine flock of Merinos, and he began experiments upon some of them to discover how far they could be carried as a mutton sheep. A ram lamb was yeaned May 26, 1812, his sire and dam both being imported sheep. He was castrated June 8, 1812, and allowed to run with the flock without any extra feeding till December 19, 1815, and was then put by himself for fattening and fed on second-crop hay, corn, oats, barley, and meal, varied from time to time as best suited him. On April 23, 1816, he was killed, after showing 140 pounds live weight. The meat when dressed for the butcher weighed 77¼ pounds, the rough tallow 13 pounds, the pelt with fleece 16 pounds; head, liver, heart, etc., 12

pounds; the feet, intestines, and other offal, 21¾ pounds. The total sum realized on this sheep is thus stated:

June 3, 1813, he was shorn of 6½ pounds of wool, which sold at 8*s*. 6*d*	$9.21
May 13, 1814, he was shorn of 8¼ pounds of wool, which sold at 12*s*	17.50
May 24, 1815, he was shorn of 9½ pounds of wool, which sold at 6*s*. 6*d*	10.02
April 23, 1816, wool pulled from the pelt 9 pounds 13 ounces, sold at 6*s*	9.81
Meat and tallow at price obtained for native sheep 9*d*	11.21
Total	57.75

Mr. Parsons states that the wether was a small eater, and he was confident that he was fatted on two-thirds the quantity required for native sheep of the same frame. The mutton was pronounced by gentlemen who partook of it to be of much finer grain and better flavor than that of the common sheep of the country.

The slaughter of the sheep continued; many had been destroyed and others threatened with destruction when, in 1818, the Massachusetts Agricultural Society, through the pen of its secretary, besought the farmers not to abandon them in despair, and protested against their entire destruction and neglect, as no other animal of their size was so valuable.

Upon the revival of manufactures, after 1820, more attention was paid to the Merino, and when increasing luxury and fashion demanded finer fabrics a finer wool was required, and Col. Shepherd, an extensive manufacturer of Northampton, led the way in the importation of the Saxony Merino in 1822 and 1823, followed in succeeding years by large importations into Boston and other ports. The origin of the Saxony Merino from the Spanish flocks and its development must here be told.

Spain guarded with jealous care her fine-wooled Merino flocks, and it does not appear that they found their way into any other European state until 1723, when Sweden procured a small flock. The native sheep of Sweden, such as existed at that time, unmixed with improved or superior sheep, were of a very inferior kind. They were of medium size, but with long and slender bodies, the legs also long and bare of wool. The tail was short, slim, and destitute of wool at its lower part. The head small, with horns short and slight and curving to the rear. The fleece open, coarse in quality, and of a medium length, in color usually white, although there were many flocks carrying black fleeces. These sheep were of a hardy constitution and not affected by the severity of the climate. Their flesh was good and not too fat; indeed, to English taste not fat enough. Ordinarily the ewes bore two lambs in the year, and the rams and old ewes were sheared two or three times yearly.

Attempts were made to improve this native breed by crossing with the sheep of Germany; with the Leicester and Cheviot, of Great Britain; with the Flemish and Eidersteil sheep, and even with those of Iceland and the islands on the Norway coast, and upon the whole

the result was quite a success. Naturally the cross on those of the islands and Iceland endured better the rigor of the climate and lived on the coarsest food. Upon this foundation Sweden introduced the Spanish Merino.

Mr. Alstroemer, a spirited and patriotic individual, who, as early as 1715, had made the attempt to improve the poor native breed, believed that improvement should not be limited to the partial success attained by the use of the German, English, Dutch, and Iceland breeds. With the view of progressing beyond this point and producing a fine-wooled sheep, he imported from Spain in 1723 a small flock of pure Merinos, and succeeded in acclimating, naturalizing, and propagating in a rigorous climate a breed which from appearances and tradition could be maintained only in a warm one. Thus Sweden became the first nation of Europe to take advantage of the superior fleeced sheep of Spain.

For some years the attempt was met with discouragement of many kinds, unt il, in 1739, the Swedish Government, convinced that the ignorance of the shepherds was a great obstacle to success in the propagation of the breed, instituted a shepherd's school, the direction and charge of which was given to Mr. Alstroemer. In 1740 the State created a fund for the purpose of awarding premiums to individuals who bred rams of the Spanish breed; and from that time a bounty of 25 per cent was paid upon the value of fine wool, of good quality, to the grower, until 1781, when it was reduced to 15 per cent; and still further to 12 per cent from 1786 to 1792, at which latter date the bounty ceased. Sweden then possessed upwards of 100,000 full-bred Merinos, and nearly 1,000,000 mixed bloods, and was able to supply all her wants in wool without any importations from Spain, and the sheep had not degenerated in the space of more than seventy years, though Sweden, of all cultivated countries, is perhaps the least calculated for sheep; the length of the days during its short summer parches its barren fields, and for seven months it is buried in snow.

The breeding of these fine sheep was almost exclusively undertaken by well-to-do farmers. The Swedish peasants, who had ordinarily only a very small number of sheep, and who were in the habit of manufacturing the materials of their own clothing, were obliged to preserve their old breeds, which only produced long and coarse wool, that they knew not how to dispense with.

The Merinos did not increase rapidly, for it happened here, as elsewhere, that there was a prejudice against them, some not willing to abandon the sheep of their fathers and grandfathers, others not believing the breed could be successfully propagated. Some willingly undertook the experiment, and imagining the sheep of that breed could be left to shift for themselves and go without care subjected them to the same system that they were accustomed to follow with their hardy native sheep, by inclosing them in damp, badly cleaned, infectious stables, in which the air was foul by reason of too much heat. They

fed them part of the year with an insufficient quantity of straw or poor fodder, made them graze in the forests, on the borders of swamps, on wet and meagre pastures where the animals found neither the proper quantity nor quality of nourishment. It was noticeable, however, that the Merino subjected to this bad treatment imperceptibly degenerated, and that their wool deteriorated in quality. While such was the case with careless keeping by inattentive people, it was observed, on the other hand, that with careful and attentive farmers and breeders the wool preserved its primitive quality. The same was observed in Holland and various parts of Germany, all of which went to show that the degeneracy of the Merino, on being taken from Spain to other countries, was caused more by poor treatment, ignorance, and carelessness than by the change of climate. This will be found to hold good everywhere and strictly so in Spain, where it has been found that the Merino degenerates unless given the necessary care. Lasteyrie, in his travels in Spain, found similar results of degeneration to those experienced in Sweden; good care gave good animals and fine wool; bad care, poor animals and coarse wool, upon which he remarks that "this difference proves that nature, in nearly all circumstances, complies with our needs only when we know how to consult her in her operations, follow her in her progress, and aid her with intelligence."

With the small farmer, poor and unprovided with sufficient fodder, the Merinos suffered some deterioration in size and fleece, but in the hands of the rich and careful landowners they increased in size and kept up the quality of the fleece. They preserved their primitive forms; their fleece was thick and the fibers very close. Their wool lost nothing of its fineness, length, or elasticity. The weight of the fleece was kept up, some rams producing 13 pounds (12 ounces to the pound). The naturalized animals were larger and stronger than those of Spain.

Schulzenheim's flock, in the province of Upland, were descended directly from individuals imported from Spain, and at the end of fifty years preserved the quality of the wool perfectly, a comparison with the best Spanish Merino showing no deterioration. His experiments, extending through five generations, demonstrated by a comparison of the fleeces that the last descendants lost none of the qualities which made the breed commendable, going to prove conclusively that the Spanish Merino could be propagated and kept in cold countries without losing anything of the fineness and beauty of their wool. The success was to that degree that it resulted in diminishing the importation of short wool and in increasing the manufacture of the fine cloths; and after the lapse of more than a century the stranger race produced wool nearly as soft and fine as at its first importation.

The course of this improvement in the sheep and wool of Sweden was not unobserved by the German States, whose sheep were generally inferior and whose wool was coarse. Efforts had been made to improve the few coarse sheep that had grown up in neglect during the intestine

wars, by the importation of Danish, English, and Turkish rams, and the effort was measurably successful, but it was reserved for the Spanish Merino to insure complete success, and it was in Saxony, at the beginning of the present century, that naturalization had obtained the most marked success and produced the most beneficent results. The different varities of sheep indigenous to the country, some of which had a good quality of wool and others a very coarse wool, were equally improved by the Spanish animals introduced into Saxony in 1765 and again in 1778.

In the former year Prince Xavier, administrator of the Electorate, during the minority of the elector, Frederick Christian, having before him the experience of Sweden, and seeking to repair the devastation caused by the "Seven years' war," obtained permission of his brother-in-law, the King of Spain, to take from Spain 300 Merinos and introduce them into Saxony. Two hundred and twenty-nine were selected from the best Spanish flocks—23 of them Escurials—and shipped from Cadiz in May, 1765, in charge of a Spanish mayoral or chief shepherd. Ninety-two rams and 128 ewes arrived safely in Saxony, and a commission was appointed whose chief object was to distribute the rams to landholders, either by actual sale or letting at reasonable rates, so as to improve all the native sheep of Saxony and to make the culture of fine wool as general as that of inferior quality formerly had been. The zoölogical gardens at Stolpen, near Dresden, on the frontier of Bohemia, at first were prepared as a depot for the distribution of these sheep, where they were taken and entrusted to the care of the Spanish shepherd who had brought them from Spain. The domains of Milkel, Maxon, Klipphausen, Oberau, and Glauschnitz were the first to enjoy the benefits of the improvement. That part of the importation retained at Stolpen the shepherd kept unmixed, with the view to ascertain how far the pure Spanish breed could be naturalized in Saxony. In March, 1774, there remained at Stolpen 5 only of the original importation and 392 of their pure-blooded progeny.

It was found after a lapse of ten years that the pure Spanish breeds had preserved their quality, that they had not degenerated, and that the product of the cross breeding had acquired a wool which yielded to those of Spain neither in fineness nor in beauty.

When experience assured the commission that it was easy to acclimate the Merino and to improve the native sheep by means of cross breeding it occupied itself with the general improvement of the flocks, after having castrated weak and defective rams. It sold in 1776 to farmers animals of the age of four years, but as the prejudice against everything new was as strong in Saxony as elsewhere, and the majority of sheepmasters still averse to the improvement, sales moved slowly and with difficulty. But the Elector, determined to accomplish his object, compelled the farmers and tenants occupying the Electoral lands to buy a certain number of Merino sheep.

The tenants and farmers, however, soon became alive to their true interests; prejudice was overthrown, and the Electoral sheepfold not proving adequate to the demands, now daily increasing, new importations were made from Spain. Reasons for a new importation were the scarcity of full-blooded animals remaining in Saxony, and the fact that the crossings and subsequent breedings had not been as properly conducted as they might have been.

In March, 1777, the king of Spain consented that more sheep should be sold to Saxony, but it was exceedingly difficult to find in all Saxony a competent man to make the selection in Spain. A Mr. Vogel, who was in charge of the ducal possessions at Ehrenberg, was finally selected, and being furnished with the proper papers, instructions, and references, and accompanied by a shepherd who had long been in charge of the fold at Stolpen, left Dresden late in 1777, arriving at Madrid early in March, 1778, and in the Estremaduras on the 18th of that month, where he made selections and purchases, as set forth in his report of the 5th of April, of 276 head, viz, 176 ewes and 100 rams.

Ewes from the cabaña of the Marquis d'Yranda	156
Ewes from the cabaña of the Countess da Cuenta	20
	176
Rams from the cabaña of the Duke of Villa Paterna	21
Rams from the cabaña of the Marquis d'Yranda	57
Rams from the cabaña of the Duchess da Negretti	17
Rams from the cabaña of the Countess da Cuenta	106
	201

On May 21, 1778, this flock reached Cadiz, from which place they were shipped to Hamburg, where they arrived August 1, 1778. In consequence of internal commotions in the country they were detained on the road from Hamburg, and did not arrive at Stolpen until May 23, 1779, the flock then consisting of 55 rams and 169 ewes. After their arrival in Saxony there were no efforts made to keep the sheep from the various cabañas distinct, the idea then prevailing that one Spanish sheep was as good as another, without any regard from which cabaña it came. The progeny of this last importation compared not only favorably with that of the first, but really excelled it. The Saxons soon discovered that half-blooded or quarter-blooded rams could not be relied upon to breed from the native sheep; that in a comparatively short time the Spanish blood was entirely bred out. They therefore retained rams and ewes of pure blood for breeders, and in many flocks all the native blood was bred out.

It was thought advisable that the Stolpen flock, composed exclusively of full-blood Merinos, should be enlarged to make more certain and prompt the propagation of the fine breeds. The increase took place gradually here, as well as in other flocks, so that the number of sheep

of pure breed belonging to the Elector in 1800 was 3,400, and 500 were sold annually at public sale, a number not sufficient to meet the demand, though in addition to those of the Electoral flock it was easy to procure good pure-bred sheep from private individuals.

Lasteyrie, who visited Saxony in 1799, and to whom the world is indebted for nearly all that is known about European sheep husbandry at the beginning of the present century, says that he observed several flocks belonging to private individuals and found that the pure breeds and also those formed by cross-breeding gave wool of the first quality. These animals were generally smaller and of bad shape. The differences depended on the quantity and quality of food given to the sheep in the different folds. There were, it is true, degenerate breeds, but that degeneration was from bad coupling, want of care, from the insufficiency and the bad quality of food, and from the unhealthfulness of the stables, where, following the customs of the country, the dung was left for a whole year.

The Government, having given particular attention to the improvement of breed and learning by experience that flocks of the Spanish breed degenerated when they were too much neglected, applied itself to instructing the growers by forming schools for the shepherds and widely spreading writings for the guidance of the countrymen on the treatment of sheep. It wisely considered that it was its duty and its interest to give these helps to agriculture. It felt that these helps should be given every time that the people had neither the means, knowledge, nor force of will necessary in new and difficult enterprises, and the recompense was ample in the great improvement that followed.

The course of breeding adopted by the Saxon sheep-masters tended to develop an extreme fineness of wool at a material sacrifice of other properties. The best were reserved for propagating the race, and by this means the characters which indicate the property of producing fine wool were maintained or increased in the progeny. The care with which this system was pursued was the main cause of that unrivaled excellence to which the fine-wooled sheep of Saxony attained; but, as just remarked, this course of breeding was at the expense of other qualities. Size of carcass, weight of fleece, and constitutional vigor were rapidly diminished. The loss of hardiness was met by an extreme care of the animal, extending to those minute and methodical arrangements so congenial to the spirit of German agriculture, and which were rendered economically practicable by the cheapness of labor. It is proper here to note the methods employed by those in charge of the Electoral farms, and by others, in raising these sheep to such a high degree of perfection as fine-wool producers.

It was endeavored, as far as soil and climate permitted, to treat the Merino sheep just as they were treated in Spain. On one point, however, a departure from the Spanish custom prevailed. It was generally believed in Saxony and other parts of Germany, as well as in Holland,

that the intermixture of sires and dams with their own progeny, or even that of animals derived from the same parentage, would occasion degeneration in fine-wooled sheep. Under this conviction the Saxon breeders often bought from other flocks rams which they substituted for those of their own, and land proprietors bound their tenants by a clause in their leases to renew every year a certain number of rams. The undistinguished mixture of the same flock, which took place in Sweden, France, and every part of Germany, demonstrated in a decisive measure that it was needless to procure other rams while any one possessed those of good qualities. The facts observed coincided with those known of Spain, where the animals bred among each other for ages without distinction of parentage. The mode of feeding, care, and treatment is given from the observation of Lasteyrie.

The usual food given the sheep during winter consisted of hay, aftermath, trefoil, and oats or rye straw. The hay was distributed twice or three times in the course of the day, and in greater or smaller quantities, as it was more or less substantial. Those who had no hay substituted for it peas haulm, vetches, or lentils. Care was taken to cut the latter kind of fodder before maturity, that it might be more nutritious and that the fall of leaf should be prevented, which would otherwise take place for want of moisture. Some farmers made amends for want of hay by the use of cakes from oleaginous grain, by bran and crushed corn, or sometimes meal. They mixed the cakes and meal in vessels filled with water, which were placed in the sheep-houses, and the residuum at the bottom of these vessels was given to the sheep. This method contributed to preserve them in good health at a season when it was difficult to procure fresh food. Grain given in this manner was found to be more nutritious, particularly if the meal had been mixed in hot water. This food was best adapted to the lambs; when given to sheep about 6 or 7 pounds of meal were allotted to a hundred. When there was a want of provender or the snow was of long continuance, corn was given to the sheep, but as this was expensive it was generally very soon replaced by roots of different kinds, such as beets, turnips, carrots, and more especially potatoes. This method, hardly adopted at all in France, was strongly recommended to owners of flocks. It was well known that the dry food on which sheep were obliged to live during a bad season often occasioned disorders, for which reason the English farmer cultivated turnips largely as his winter resource. Thus he was enabled to keep a larger stock than he otherwise could, a provision of roots being added to his ordinary fodder. The Saxon wethers and the ewes without lambs had no food but hay or other inferior sort, the best being reserved for the ewe mothers, the rams, and the lambs. During winter the flocks were taken into the fields or woods, when the season permitted. Breeders who had no winter pasturage kept their flocks in the sheep-houses from the beginning of November till April, but care was taken that they moved about in the courts every day and

AFTER YOUATT. SAXONY MERINO RAM.

remained in the open air three or four hours. The doors of the houses, too, were frequently opened, that the air might be incessantly changed. There were some Saxon flock-owners who had no pastures at all, and kept their sheep in their houses and yards throughout the year, nor did this treatment seem injurious either to their health or the fineness of their wool, as long as care was taken to supply them with proper food and to keep their houses dry and airy. The general custom, however, was to put them, during favorable weather, into pastures, where they found a sufficient quantity of food; and when these were not to be had they were driven to the hills and other dry places. They left the houses in the morning as soon as the dew entirely disappeared, and rested in the shade during the heat of the day. When rain fell heavily or the fogs were thick they were kept in their houses, nor were they suffered to go into the fields after a heavy shower of hail. In this respect the Saxons imitated the shepherds of Spain. It was customary on some Saxon farms to let the sheep drink in their stables during winter instead of taking them to the watering places. The Saxon breeders not only considered salt salutary to sheep, but were of opinion that it imparted a greater degree of fineness to the fleece. Upon the whole the different methods of management were varied and modified according to the nature of the soil and its products. Good farmers observed the principle without which no flock can prosper, that is, to keep a number of animals only in proportion to the quantity of support grown on the land. Experience has proved that the quality of wool produced by a flock is always proportionate to the quality and extent of the nutriment which it has received.

The shearing of the sheep in Saxony takes place at the beginning of May, after the fleece has been washed on the back of the animal. Formerly the wool was washed in warm water after being cut from the sheep, according to the Spanish plan; but this custom has been abandoned in consequence of the wool felting into balls, by which its value was much reduced. The mode of washing generally pursued consists in driving the sheep through a brook or rivulet. The next morning they are again plunged into the stream, that every part of the fleece may be equally penetrated. After this the wool is pressed by the hand, beginning at the head and proceeding regularly to the extremities. In the afternoon they are driven once more through the water, then two days are allowed for the fleeces to become dry, and on the next day they are shorn.

Thus for many years the Saxon flock-masters took the greatest care of their flocks, breeding, feeding, and rearing them with but one object. Every other point was made secondary to the fineness of the fleece. This course pursued steadily through generations gave at length the perfect Saxon Merino. Originally springing from the hardy Spanish Merino, the same parent stock from which has sprung the hardy American and French Merino, it was bred down to a badly formed, weak,

light-fleeced animal. But the sacrifice of physical points attained the end in view—a wool of almost gossamer fineness, weighing only 10 or 20 ounces to the fleece, but finding a market willing to pay a good price for it.

From the first period of its introduction until 1814, when Europe once more began to enjoy the blessings of a general peace, Saxon wool was gradually, though surely, spreading itself over the surface of the kingdom of Saxony; but when the continental trade was thrown quite open by the events of the short campaign of 1815, and the minds of men were set at rest by the final overthrow of Napoleon, the Saxon wool-dealers began to open a regular trade in this article to England, and they soon discovered the real value of their new branch of German commerce.

	Pounds.
In the first year (1814) there were imported into England....	3,593,146
In 1819 there were imported into England.....	4,557,938
In 1824 there were imported into England.....	15,432,657
In 1828 there were imported into England.....	23,110,882

The great increase in the demand for this wool naturally excited the emulation of the states lying contiguous to Saxony, and the flock-masters of the kingdom carried on, for a considerable period, a very prosperous trade in rams and ewes with the landowners of Silesia, Bohemia, Austria, and other parts, who were desirious of changing the nature of their flocks to this more profitable breed. All the superabundance of grain, which had no external market to absorb it, was given to the sheep in order to accelerate their approach to the maximum degree of fineness of which their wool was susceptible, thus actually creating a profitable consumption for their corn, through the eagerness of England to obtain a superior quality of wool.

This eagerness for fine wool was not confined to the English manufacturer. When the goods of great excellence fabricated from this fine Saxon wool were imported into the United States they challenged admiration and found quick sales. The American manufacturers began the importation of the wool, and finally introduced the Saxony Merino sheep into the United States.

Dr. Henry S. Randall says that these Saxony sheep, when introduced into the United States, lacked at least one-fifth and often more of the weight of the parent Spanish Merino as it then was; they were longer legged in proportion to size, slimmer, finer boned, and thinner in the neck and head. At every point they gave indications of a more delicate organization. Their fleeces averaged from 1½ to 2 pounds of washed wool in ewes and from 2 to 3 pounds in rams. There was sufficient yolk in the fleece to give it pliancy and brilliancy, but the yolk was colorless, limpid, and easily liberated in washing. It never assumed a viscid, waxy consistency or became indurated into "gum," either within or on the outer extremity of the wool, and consequently having nothing on the surface to catch and retain dirt the fleece remained almost white externally. The staple was usually from an

ELECTORAL ESCURIAL RAM, No. 177.

OF VON THAER'S SHEEPFOLD AT MOEGLIN IN PRUSSIA.

DRAWN FROM NATURE BY CH. L. FLEISCHMANN FOR U. S. PATENT OFFICE, 1847.

ELECTORAL ESCURIAL EWE.

OF VON THAER'S SHEEPFOLD.

DRAWN FROM NATURE BY CH. L. FLEISCHBAHN FOR U. S. PATENT OFFICE, 1847.

INFANTADO NEGRETTI RAM.

FROM THE SHEEPFOLD AT HOSCHTITZ IN MORAVIA.

DRAWN FROM NATURE BY CH. L. FLEISCHMANN FOR U. S. PATENT OFFICE, 1847.

inch to an inch and a half in length on the back and sides, shorter on the belly, and formed a considerably less compact mass than that of the Spanish Merino. In the best sheep the surface of the fleece was smooth and even (as if it had been cut off at a uniform length), and it broke into masses of same size; but in inferior animals the wool grew in small disconnected tufts, which ended in points externally. These fell apart on the shoulder and along the back, and in some instances partly hung down like hair or Leicester wool, instead of standing at right angles to the surface. The last indicated extreme thinness of fleece. When to this were added a gauzy, half-peeled nose and ear—an ear as thin and almost as transparent as parchment—a pale skin, a carcass without depth and about 6 inches thick, a camel-shaped neck, and long spider legs, the "lower deep" of debility and degeneracy was reached. But there was an atoning beauty about the wool of the Saxon which it was hard to resist. It flashed with such a gem-like luster; it was so beautifully fine and even; it had such an exquisite downiness of touch, that all other wool seemed base by the side of it. "It was so pliant," says Randall, "that a lock of it held upright by the outer end, between a thumb and finger, and gently played up and down, would bend and dance like a plume." According to Youatt's measurements the fiber was about $\frac{1}{570}$ of an inch in diameter, but he did not obtain fine specimens of the wool. Such is the picture presented us of the Saxony Merino at the period of its importation into the United States—the period of its greatest physical degeneracy, for at that time began a reaction in the mode of breeding them.

The first importation of Saxony Merino sheep into the United States was made, in 1822, by Mr. Samuel Henshaw, a merchant of Boston, and, as stated elsewhere, at the instance of Col. James Shephard, a woolen manufacturer of Northampton, Mass. The number imported was four. Two went to J. W. Miller, at Philadelphia, and two to Northampton, to Col. Shephard and Isaac C. Bates.* The fleeces of the two sent to Philadelphia weighed, in the dirt, 17⅜ pounds, and the animals were very superior. Mr. Miller states that the fleeces were covered with tar and dirt, having been two months on board ship, and when washed weighed: First quality, 2 pounds 2 ounces; second quality, 1 pound 8 ounces; third quality, 14 ounces; fourth and inferior quality, 2 pounds 8 ounces; a total of 7 pounds, or 3½ pounds to each sheep. Mr. Miller, who had a fine flock of Spanish Merinos, near Philadelphia, crossed them with these Saxony rams and had eighty or ninety lambs the first season. From the cross of one ram, sent to Northampton with a Merino flock, there were offered for sale in October, 1824, fifty rams. In 1823 Henshaw and Bates made another importation of one ram and three ewes, and on July 5, of the same year, there arrived from Hamburg two

* Isaac C. Bates and Col. James Shephard, of Northampton, recently imported two Saxon bucks, which have arrived. They were purchased in Saxony more than a year since. (New England Farmer, November 23, 1822.)

Saxony rams and three ewes for Hon. Joseph Strong, of South Hadley, Mass.

In 1824, Messrs. G. & T. Searle, of Boston, imported seventy-seven Saxony sheep. They were selected and purchased by a Mr. Kretchman, a correspondent of the firm, residing at Leipsic, and were shipped at Bremen on the American schooner *Velocity*. Henry D. Grove, subsequently an enthusiastic and honest breeder of the Saxons, in New York State, was engaged to take charge of the sheep on the passage, and also shipped six sheep on his own account. Mr. Grove says that fully one-third of the sheep purchased by Mr. Kretchman (who shared profit and loss in the undertaking) were not full-blooded Saxons. The cargo was sold at auction as "pure-blooded Electoral Saxons," and thus, unfortunately, in the very outset the pure and impure became hopelessly mixed. The average price realized per head was $69.35. At this sale Samuel Hurlbert & Co., of Winchester, Conn., purchased seven rams, seven ewes, and a lamb, being the first to be introduced into that State.

In the fall of 1824 Mr. Grove entered into an agreement with the Messrs. Searle to return to Saxony and purchase, in connection with Kretchman, from 160 to 200 Electoral sheep. He was detained at sea seven weeks, which gave rise to the belief that he had been shipwrecked and lost. When he finally arrived the sheep had already been bought by Kretchman, and they were a shabby lot. On being informed of what the purchase consisted, Grove protested against taking them to America and insisted on a better selection, but to no purpose. Anything was good enough for an American. A quarrel ensued, and Kretchman went so far as to engage another to take charge of the sheep on this passage, but Mr. Grove's friends interfering the trouble was adjusted, and finally Mr. Grove was induced to take charge of the sheep across the water. The number shipped was 167; 15 of them perished on the passage. Eighty one rams, 57 ewes, and 20 lambs were sold at Brighton, near Boston, July 14, 1825, and the prices realized averaged $158.80 per head, excluding lambs. The highest price was $425, which was paid for a buck by Judge Pendleton, of Dutchess County, N. Y. Judge Effingham Lawrence, of Long Island, paid $235 for a ewe. The whole cargo found ready purchasers from the New England States and New York. Says Mr. Grove:

> A portion of this importation consisted of grade sheep, which sold as high as the pure bloods, for the American purchasers could not know the difference. It may be readily imagined what an inducement the Brighton sale held out to speculation, both in this country and Saxony. The German newspapers teemed with advertisements of sheep for sale, headed "Good for the American Market," and these sheep, in many instances, were actually bought up for the American market at $5, $8, or $10 a head, when the pure bloods could not be purchased at prices less than $30 to $40.

In 1825 (exact date not known), a miserable lot of Saxony sheep arrived at Portsmouth, N. H. Fortunately, there were but 13 all told.

In March, 1826, 191 Saxony sheep arrived in New York by the brig *William*, on German account. They were sold on the 26th of that

month, and the highest price realized was $350 for a ram, the purchaser being Mr. Hurd, of Dutchess County, N. Y. The lowest ram sold for $160. The ewes sold generally from $36 to $85. One of the Hurlberts, of Connecticut, who had bought fifteen Saxonies the year before, was present and made some purchases, and affirmed that such was the rage for those sheep in his State that within a few weeks he had sold a pair of twin lambs before they were a fortnight old for $430. These 191 sheep were for the most part well descended and valuable animals. A few of them were grade sheep. In June, 1826, the brig *Louisa* brought out 173 on German account. Not more than one-third of them had any pretentions to purity of blood. Then followed another shipment on German account of 158 from Bremen into New York. Some of these were diseased before they left Bremen, and 22 died before the arrival of the brig.

The next cargo coming to New York was selected by Mr. Grove, 165 in number, and owned by Mr. Grove and Mr. F. Gebhard, of New York. They cost $65 per head landed at New York, and sold at an average of $50 per head, thus entailing a loss of over $2,400. They were of the best Saxony blood. A cargo of 81 arrived at New York shortly after, soon followed by another of 184 on German account, by the brig *Warren*. With a few exceptions these were good, pure-blooded sheep. Another vessel from Bremen brought over 200 of the most miserable character, some of them being hardly half-grade sheep. This lot is known as the "stop-sale sheep." The ship *Phebe Ann* brought 120 sheep. More were landed at New York of which there is no account. At a sale in New York, July 12, 1826, presumably of the cargo of 81 sheep, 38 rams and 40 ewes brought an average of $27 per head each. A cargo of 60 arrived at Philadelphia early in 1826, and on May 27 William Patterson, of Baltimore, received direct from Bremen 12 of the very finest Saxons.

Messrs. Searle & Co. imported three cargoes into Boston in 1826, numbering in the aggregate 513 sheep. They were about the same in character as their former importations—in the main good, but mixed with some grade sheep. Of these, 321 rams and ewes and 58 lambs were sold at Brighton, May 14, 1826. The average amount realized was $44 per head. The highest price was $210 and the lowest $15. Among the purchasers at this sale was William Jarvis, who secured about 50 head at from $32.50 to $137.50 each, the latter for a yearling ram. These he crossed with his Spanish Merinos, a step which he soon found cause to regret. Early in July, 1826, a cargo arrived at Boston on German account, Emil Bach, of Leipsic, supercargo. A few were good sheep and of pure blood, but taken as a whole they were a miserable lot. The owners sank about $3,000 in the venture, notwithstanding they were advertised as "selected from the most renowned Electoral flocks in Saxony." The average amount realized per head was $18.64. Next came another cargo on German account, Wasmuss

& Multer owners. It numbered 210, and the whole cost in Germany was $1.125. With the exception of a small number, procured to make a flourish on in their advertisements for sale, these were sheep having no pretensions to purity of blood. Two of the five named cargoes arriving at Boston (in addition to the one sold May 14, 1823) were sold at auction at Brighton. A sale of October 21 included 124 bucks and 76 ewes, by the ship *Tartar*. The total amount of this sale was $5,354, the rams averaging $25.85 and the ewes $28.25. The other cargo, by the ship *Catharine*, consisted of 174 rams and 30 ewes, and realized but $2,051.50, the rams averaging $9.71 and the ewes $12.05. Some old-fashioned Spanish Merinos were put up at one of these sales. They were from three-eighths to full blood, and fetched from $5.50 to $26 each.

Early in 1826 Capt. Chandler, of the brig *Samuel*, imported into Boston, from Bremen, 167 Saxon sheep. The wool of these sheep was of extreme fineness and beauty, and July 13, 1826, 190 rams and 30 ewes were offered for sale at Brighton, which had arrived from Bremen by the *Hyperion*, said to be pure Electoral Saxons.

A correspondent of the Cultivator who lived near Brighton, where the first flocks of these Saxony sheep were sold at auction, and at which he was a purchaser, says that the novelty of the consideration that a new breed of sheep far surpassing the Merino, which in preceding estimation had been considered the ultimatum of excellence and so recently sold at extravagant prices, at once excited the highest sheep frenzy and assembled at the first sale all those who had imbibed a particle of taste and interest in sheep culture. Of this and many other flocks imported at this time four flocks might be admitted to be called Saxony sheep, and of these one-half might be denominated prime. These sheep were generally labeled, but the best were branded either with a cross or a crown. The same writer saw two entire flocks sold, which were brought as a return cargo, the captain being master and factor, which would disgrace any country whose name should be associated with pure blood and fine wool. These sheep were purchased by speculators and sold through the country as Saxony sheep.

In August, 1827, the brig *Comet* came into Boston harbor from Hamburg with 101 Saxony sheep, all rams from one to four years old. They were sold at Brighton at prices ranging from $8 to $64, the average price being $27 per head. This was an importation of Watmuss & Multer, and Mr. Grove says the sheep were selected exclusively from grade flocks of a low character. Shortly after this the Messrs. Searles imported in the *Mentor* from Hamburg 182 Saxons. These were sold October 18, 1827. The 21 rams sold from $18 to $68, and the 161 ewes from $6 to $72. They were like the importations preceding, a mixture of pure and impure blooded sheep. The papers of the day in chronicling the sale remarked that the disposition to purchase seemed good, but the sheep were not as good as former exportations. Mr. Grove

says it is due, however, to the Messrs. Searle to say that, as a whole, their importations were much better than any other made into Boston.

Having determined to settle in the United States, Mr. Grove returned to Saxony and spent the winter of 1826–'27 in visiting and examining many flocks. He selected 115 from the celebrated flock of Macherns, embarked on board the ship *Albion*, and landed in New York June 27, 1827. In 1828 he received 80 more selected by a friend from the same Macherns flock and drove them to Shaftsbury, thence to Hoosic, N. Y., where he established, and, until his death, maintained, one of the best, if not the best, Saxony Merino flocks in the country.

Other importations came in 1828. In June about 200, noted as the best ever imported into Boston, arrived in the *Bremen* and were sold at auction the month following. In August the *Corsair* arrived from Hamburg with 134 Saxony sheep, consigned to G. & T. Searle, and the commercial editor of a Boston paper, noting the arrival, says: "It is pleasant to believe that we may have a supply of the finest-wooled breeds of sheep, but the coarsest wool, taxed by the late tariff, we hope never will be grown in the United States, though the duty on it must operate as a burden on the consumers of the coarsest cloths without a corresponding benefit to any other persons." These sheep of Searle's—48 rams and 85 ewes of the celebrated Macherns flock—were sold at auction by Coolidge, Poor & Head, October 14, 1828.

On September 25, 1828, there arrived at New York 25 rams and 112 ewes, characterized as Saxons of the purest blood. There were other importations at other ports during the years 1824, 1825, 1826, 1827, and 1828, and many after the last named date, which can not here be followed, the simple object being in noting the importations of the five years (1824–1828) to show that enough were brought over to change the character of all the American flocks, should the mania affect all the owners, which was, unfortunately, with few exceptions, the case; and to mark its effect also upon the woolen manufacture. During these years the recorded arrivals of Saxony sheep at the ports of Boston, New York, Portsmouth, Philadelphia, and Baltimore, principally at the two first-named places, numbered 3,400; 77 in 1824; 164 in 1825; 2,288 in 1826; 398 in 1827, and 550 in 1828.

The first appreciable effect that the introduction of the Saxony sheep had was the further destruction of the old Spanish Merino. The Spanish flocks, with few exceptions, were crossed with the Saxony, and finally almost disappeared. So near to practical extinction were they that when it was found somewhat later that the Spanish Merino was the most valuable for American purposes, but few flocks could be found from which to renew the old blood, and these flocks comprised but few animals. For a time all other sheep were lost sight of and speculation ruled the day. This speculation set in shortly after the passage of the tariff act of 1824 and the consequent increase in the woolen manufacture, but it was a speculation of a losing kind, many of the importa-

tions not paying expenses, for the farmers and many others had not yet recovered from their severe losses on the Spanish Merinos between 1816 and 1820, and were slow to respond to the appeals made in behalf of the Saxony. For a short time the prices ruled not as high as the importers had anticipated, though higher than the Spanish Merino was held at that time. In addition to the prices noted at the importers' sales, it is known that many sales were made throughout the country at a great advance upon them. In January, 1825, a Saxon ram sold in Connecticut for $230; two at $120 each; one at $100; one-half of another for $100. One ewe sold for $110 and three for $100 each. In April, 1826, at a sale at Albany, N. Y., seven rams sold for $150 to $210 each, and fourteen ewes at $60 each—prices deemed so low that the sale was stopped. Many descendants of Saxony Merino and Spanish Merino crossed were on the market in 1826 and 1827, and the rapid multiplication of them was marvelous. But the importation had declined in 1827.

The early American history and fortunes of this sheep are bound up with the question of the American tariff and the condition of British trade. The tariff act of 1824 encouraged the American woolen manufacture and 2,288 Saxony sheep were imported in 1826. But the necessities of the British manufacturer threw an immense quantity of woolens on the American market which more than neutralized the good effects of the tariff, and the Saxony Merino shared in the general depression, only 398 being imported in 1827. Wool declined rapidly in price and Saxony sheep fell from a general average of about $30 per head to less than $24 per head, many rams selling as low as $8 and ewes at $6. For the Spanish Merino there were no sales. Half-blood Merinos and common sheep were consigned to destruction by thousands. But with the passage of the tariff of 1828, generally known as the "woolens bill," the interest in Saxony sheep revived, and there was a great excitement among the wool-growers and the woolen manufacturers, an excitement and exhilaration that carried beyond the bounds of sober reason. "Especially among the former were scores exhibited that would be remembered with amusement," says Henry S. Randall, "had not their results proved so injurious to public and private interests." What he says upon this point applies not only to Massachusetts and New England, but to every part of the United States where fine-wooled sheep husbandry was followed:

> Intelligent and enterprising farmers pulled down their barns to build greater, or at least made the most costly preparations for growing wool, and then sent one hundred or one thousand miles to purchase Saxon sheep at $100 or $500 a head. When the prodigies arrived, with what a blank look the proprietor, and with what an irrepressible titter the farm laborers first surveyed the little strangers! If they had been exposed to storms and hardships on their journey, they did indeed present a very disconsolate appearance. The public were in the midst of a fine-wool cyclone. The manufacturer and producer talked of the exquisite fineness of this or that clip—but whether the sheep which bore it yielded much or little, had good or bad carcasses, were hardy or feeble, was scarcely a matter of thought. Enormously exaggerated expectations of the future demand for Saxon wool were entertained; it was

to increase with our increasing population; the tariff was to raise prices to the highest pitch; and then the tariff and the high prices were to stand for generations, if not forever.

It is remarkable that this Saxon mania had so little effect, comparatively, on the estimated value of the descendants of the Spanish Merino in our country. They rose in value; but their chief value seemed to be considered as resting on the fact that they would grade up more rapidly than common sheep toward the Saxon standard of fineness; in other words, make a better cross with the Saxon. The idea that they had a separate value, approaching that of the latter, appears to have entered nobody's mind. Yet at that very time the average of Saxon wool was not 10 cents higher a pound than Spanish, and the product of a Spanish sheep was worth more in market than the product of a Saxon sheep. Even the prices of fine wool did not rise until near the close of 1830. American producers of very fine wools have ever fed on expectation, but never attained the fruition of their hopes.

Wool did not respond to the sanguine hopes of the wool-grower. Wool that sold in 1825 for 42 and 45 cents sold for 30 and 35 cents in 1829, and down to 29 and 33½ cents—well-washed, full-blood American Merino wool. Clean Saxony wool sold all the way from 35 to 80 cents. This was early in the year. In July there was a decline on all these prices, full-blood Merino, washed, selling as low as 27 cents, and at this time, at Northampton, Mass., the difference in price between the three-quarter bred Merino and half-blood Saxony, between pretty fine and very fine wool, was only a few cents. Some fleeces of half-Saxony sold for 32 and 33 cents. At the same time a Saxon ram that had cost $80 sold for $12. It was so in all New England; the grower could realize but 90 cents to $1.10 for his fleece, though the sheep were of improved breed and cost $1.15 to $1.50 per year to keep. What was true in Massachusetts and New England was true in the Middle States and the West. Wool was low everywhere.

The great decline in wool was fatal to sheep husbandry, and the new Saxony sheep lost its popularity. In most communities there was no sale for them. But there were other causes for the decline of the Saxony sheep. After they had been generally crossed on the Spanish Merino and its grades it was found to be less hardy than the Spanish Merino, and wherever its blood was introduced it was universally followed by a decline in constitution and all its attendant evils. Their fleeces were too light to protect them sufficiently from the cold and wet, and besides the fleece was not remunerative, averaging only 2½ pounds. Though not strictly in place, the early experience of William Jarvis with these Saxony sheep may here be told, for what was true of them in Vermont was found true in Massachusetts. Writing in 1832, he says:

I have been an attentive breeder of Merino sheep for twenty-two years, and six years of Saxony, and my own experience, as well as that of my neighbors, has proved that the Spanish Merino has a more vigorous constitution, is a hardier animal, and much less liable to diseases than the Saxony. * * * In 1826 a greater number of Saxony sheep were imported than I believe were before, or have been since, all put together. Two cargoes were sold at Brighton in May of that year, containing nearly 500, which I closely examined, and think there were not 20 among them of any one flock which was readily determined by the earmarks. I purchased 54, 4 of which only were from the same flock. I put 8 bucks out of these to 300 Merino ewes,

and the progeny was more feeble than I had ever witnessed from Merino bucks. I did not raise more than 3 lambs from 5 ewes for two successive years, and in putting full-blooded Saxony bucks to the ewes thus crossed I have not raised more than 2 lambs to 5 ewes. I have been still more unsuccessful in raising lambs from the full-blooded Saxony ewes and bucks, although they have been rather better kept than my other sheep. From my full-blooded Merino stock my increase was commonly 9 lambs to 10 ewes, and never less than 4 lambs to 5 ewes; and those Merino bucks had always been selected for fineness and weight of fleece and shape from my own flock. A more distant cross could not have been made than between the Saxony and Merino—and yet the same ewes which commonly raised 9 lambs from 10 ewes, and I believe never less than 4 lambs from 5 ewes when put to Merino bucks of the same stock, only raised 3 lambs from 5 ewes when crossed with the imported Saxonies. Hence it is evident that the lesser increase on the part of the Saxony breed must be attributable to some other cause than breeding "in-and-in." The form of the sheep alone will satisfy an experienced agriculturist of the true cause. They are long-legged, thin-quartered, flat-sided, narrow-loined, not sufficiently deep-chested, and long-necked. All domestic animals of this shape have feeble constitutions. But it may be asked, how does it happen that those sheep which are descended from the Spanish are so inferior in form to them? The most probable solution of the question is, that the persons who were sent by the Elector of Saxony into Spain to select were not aware of a fact known to every attentive breeder, that individuals of the same flock which have the most feeble constitutions generally have the finest and lightest fleeces; and as fineness was their principal object they selected the finest-wooled sheep without any reference to form of carcass or weight of fleece. In this they have succeeded, for the Saxony wool is certainly finer than the Spanish; but the latter will, sheep for sheep, at least, yield one-third more in weight of wool, and it possesses the felting or fulling property in as high a degree.*

The experience of a Connecticut wool-grower who had brought his Spanish Merino flock up to 4¼ to 4½ pounds washed wool was similar. On the importation of the Saxony he bought largely and was sadly disappointed, for he lost not only in the value of the fleece, but still more by feebleness of constitution. His Spanish Merino lambs used to drop in March, and their close hairy coats afforded them protection. But March was too cold for the delicate and half naked Saxons. He was obliged to have them drop in May. This was bad management, for when the lambs were weaned it was so late in the season that the mothers would not get fat before winter set in. The Merino lambs were so hardy that the loss of one could almost always be traced to some accident or neglect, but the Saxons would die in spite of all that could be done, the loss being 15 to 20 per cent. The average weight of the fleeces became very much reduced, and he never sold his clip at over 80 cents a pound. In 1833 he found out his mistake and sold out the whole, reserving such of the old Merinos as he could select. And such also was the experience of the farmers of Massachusetts. From 1834 the Saxon flocks began to decline and the Spanish Merino to appreciate. In 1837 old Merino rams (the Spanish) sold for $25, Saxons for $15 to $20, and the Spanish and Saxon cross from $5 to $15. In 1842 pure Spanish and Saxony Merino rams and ewes sold for $6 to $10 each, while Southdowns sold for $15 to $25 each.

*Niles Weekly Register, February 25, 1832.

In 1830 there were 360,682 sheep in the State and the number increased to 384,614 in 1838, mostly Spanish Merinos and Saxonies and their crosses, shearing 1,056,327 pounds of wool. In western Massachusetts wool-growing was one of the most lucrative pursuits of the farmer. The hill towns between the valley of the Connecticut and the western line of the State were extensively engaged in growing wool. On the hillsides near Berkshire Mountains, where the soil is hard and cold and not rich for cultivation, but admirably adapted by nature for grazing, immense numbers of sheep grazed among the rocks and woodlands and on the warm sunny slopes. Sheep husbandry was practically limited to wool-growing, the small, fine-wool breeds being of little value except for their fleece, and the prices of wool dependent upon a struggling wool industry. It was demonstrated to the farmers of the State that the wide ranges of cheap lands opening up at the West were better adapted to the business, and flocks were gradually sacrificed from about 1840. The demand for mutton had been increasing for many years and gave much encouragement to the business of fattening wethers. The cross-bred Merino and common wether was very popular, and the full-bred Merino wether was not despised, when properly fattened and handled by the butcher. But the Southdown, the Leicester, and the Lincoln crosses on the Merino ewe or the pure-bred English sheep stood highest in estimation. Col. Jacques, near Boston, had some fine Leicester sheep in 1822; Capt. Lowe, of Boston, imported some Texel sheep from the Netherlands in 1823 for Col. Jacques; and in 1824 another importation of Texel sheep was made by Col. T. H. Perkins, of Boston. In 1825 A. A. Lawrence imported 6 Southdowns and 10 Lincolnshires, and in 1827 Gen. John Coffin presented to the Massachusetts Agricultural Society 4 rams and 3 ewes of the long-wooled Devonshire Notts, selected by himself in England. One of these sheep sheared 13 pounds of long, fine wool. In 1829 Mr. Pickering imported 2 rams and 2 ewes of the Lincolnshire breed and 3 rams, 6 ewes, and 6 lambs of the Leicester breed. One of the Lincolnshire rams was shorn on the passage of 19 pounds of wool. There were many direct importations for several succeeding years, and improved mutton breeds were brought into the State from Rhode Island and New York.

In 1840 the number of sheep in Massachusetts was 378,226, yielding 941,906 pounds of wool. The flocks rarely exceeded 200 to 300 sheep; many kept but a small number, generally of fine wool three-fourths or seven-eighths blood. The Saxony did not prevail to a great extent, as most of the sheep were bred without that extraordinary care and expense required by them and the preservation of purity of blood and very few of the pure blood were to be found. The fleece of the Saxonies yielded not much more than 2 pounds, while the Spanish Merino averaged 3 pounds of well-washed wool. The common or native sheep were very scarce and not well defined. It was a large, coarse-boned, coarse-wooled animal, yielding 3 to 4 pounds of wool, extremely hardy and prolific, but

few remained that had not for the twenty-five years preceding been more or less tinctured with Merino blood with a resultant increase in weight of fleece and fineness of wool.

In 1845 there 165,428 Merinos and crosses, yielding 487,050 pounds of wool; in 1855 the Merinos had decreased to 65,548, yielding only 188,504 pounds of wool. The Saxonies in 1845 numbered 33,875, producing 93,218 pounds of wool, and in 1855 had decreased to 6,806, with 14,549 pounds of wool. In 1845 the total value of all the sheep and wool was $923,420; while in 1855, only 10 years later, it was $464,889—showing a depreciation in ten years of nearly half a million dollars. The whole number of sheep had decreased from 354,943 in 1845 to 145,215 in 1855, and the wool product from 1,016,230 pounds in 1845 to 416,156 pounds in 1855.

The period from 1845 to 1855 marks the transition from fine-wool to coarse-wool and mutton industry. In 1845 the fine-wooled sheep numbered 199,303, or 43,663 more than all others, while in 1855 they numbered only 72,390, or 435 less than the coarse and middle wools. The causes are various.

The tariff of 1846 was ruinous to the fine-wool industry of the United States. At that date many factories were producing broadcloth equal in quality to any made in Germany and Great Britain. Large quantities of fine Saxony and Spanish Merino wools, equal in many respects to that produced in Saxony, France, or Spain, was raised in Massachusetts and adjoining States and found a ready market at fairly remunerative prices. But when that tariff went into operation the American manufacturer could not compete with the cheap labor and vast capital of the Old World; consequently, the manufacture of broadcloth was abandoned and so absolutely that in 1860 there was scarcely a loom in the United States making that kind of goods. The machinery released from making broadcloth was employed in fabricating medium and coarse fancy cassimeres, which required a coarser and longer stapled wool than fine broadcloth. But the farmer could not change his sheep so quickly; they were fine-wooled, and with the loss of the broadcloth trade the value of fine wool suffered depreciation; the sheep were valuable for wool only. Their carcasses being small, their lambs small, and the sheep being tender, rendered them scarcely remunerative; the breeds were suffered to run out and the cultivation of fine wool was nearly destroyed in the State and seriously affected in every other State. Whole flocks that had been bred up on common sheep and become fine-wooled ones were now crossed back into coarse-wooled flocks. It was under this system that nearly 200,000 fine-wooled sheep in 1845 were reduced to 72,290 in 1855. And the tariff affected quite as disastrously coarse-wool growing.

In 1845 the long and middle wool sheep of the State constituted about two-fifths of the whole number and some improvement was being made by the introduction of pure bred Southdowns, Lincolns, and Lei-

cesters, the former giving 3½ pounds of wool each, and the latter 6 pounds, well adapted to spinning worsted. The Leicesters had been introduced as early as 1823, but not until 1842 did they receive special attention on account of their wool alone.

In 1842 a few enterprising firms in Massachusetts commenced the manufacture of worsted goods and were bidding fair to establish that business on a permanent basis. This called for another and entirely different class of wool—a kind produced in great perfection in England, the raising of which secured to that country the control of the manufacture of coarse and medium worsteds and enabled her to compete with the world. When this worsted business commenced there was a demand for long worsted wool, and some of the farmers imported some of the long-wooled breeds of sheep with the intention of supplying the demand for that class of wool. Ten factories, employing 846 hands, were in operation in 1845 in Massachusetts. These produced 2,321,338 yards of woven goods, and 617,360 pounds of yarn. But the tariff of 1846 closed up that business and coarse-wooled sheep shared the same fate as the fine-wooled ones—they fell from 155,640 in 1845 to 72,825 in 1855, and there was scarcely a decent flock of sheep of any kind in the State. Yet the manufacture of mousseline de laine continued, but for a number of years the filling was a fine woolen thread and not worsted, and required a medium wool with a medium length of staple.

Daniel Webster is said to have imported the first Cheviot sheep into Massachusetts, and in 1846 had 20 pure-bred ones, and in 1852 there were some Cheviot sheep shown at the Norfolk County fair.

In September, 1853, Richard S. Fay had a flock of Oxford Downs on his farm. Mr. Fay made his own selection from one of the best flocks in England. The original stocks from which the Oxford Down breed was created were Southdown and Cotswold, and from a judicious course of systematic breeding for twenty-five years it became a distinct race, combining the hardiness and flavor of the Southdown with the weight of fleece and size of the Cotswold. These sheep were put upon Mr. Fay's farm upon their arrival in September, 1853, with the native Vermonters, upon rocky hills, which for twenty years had been overrun with dyer's broom. They fared as well as the rest, keeping in fine health and condition until driven in by winter. They were fed the same as other sheep during the winter, and at lambing season were given oil-cake and turnips, but no hay or straw. The Oxfordshires became immediately popular, and many importations were made by David Sears, jr., of Boston, by which they became widely extended. These importations had gray faces and legs, not quite so dark as the Southdowns, head fine, and well set; small bone, deep brisket, round hams, good flat back; hips wide, and tail set up high, belly straight; buttock square, legs rather short and fine, and twist full; the loin wide and deep, and a wide spread between the hind legs for the development of the udder, indicating good milkers. They were exceedingly gentle,

quiet, and orderly, never jumping, and not inclined to ramble; were hearty feeders, and would thrive on anything given them, and bore scanty pasturage better than any other large sheep. The ewes commonly had twins, and suckled them both; the lambs were very thriving, often reaching 100 pounds in five months on nothing but milk and grass. A yearling ram from Mr. Fay's flock gained 15 pounds in three weeks, and a ram lamb, weighing 85 pounds at five months, at six months weighed 105, on nothing but grass. A ram seventeen months old weighed 250 pounds, and at twenty-one months old 300 pounds, and a five-year-old ram in 1860 weighed 360 pounds. Mr. Fay's ewes weighed from 150 to 180 pounds. The fleeces of these sheep were thick and heavy and found a ready market, the wool being of a very desirable quality for certain fabrics. Mr. Fay's flock averaged over 7 pounds of unwashed wool, for which, in 1860, he got 34 cents per pound. As a breed from which to raise early lambs, one of the most desirable and profitable branches of farming in Massachusetts, the Oxford Downs were considered unrivaled on account of the quick growth, early maturity, healthiness, and thriftiness of the lambs. They made a most excellent cross for lambs on the native sheep. The quality of their mutton was unsurpassed, and they possessed the rare merit of ripening early.*

The improved Cotswold or New Oxfordshire, with large frames and very white, open fleeces of moderately fine wool, were liked by many Massachusetts farmers. Lawrence Smith, of Middlefield, who had bred them over eight years, or since 1853, thus writes to the Massachusetts board of agriculture in 1860:

> I doubt whether they are as hardy as the old-fashioned Cotswolds or Southdowns. I have never had any trouble with them in regard to cold weather or changes of climate; indeed, they prefer an open, cool, airy situation to any other, and nothing is more destructive to their health than tight, ill-ventilated stables. My present experience warrants me in saying that one-half the ewes will have twins. They are capital nurses and milkers. I have not had, for the past seven years, a single case of neglect on the part of the dam, nor have I lost a single lamb from lack of constitution. Yearling ewes will weigh in store condition from 125 pounds to 175 pounds; fat wethers at 3 years old from 175 pounds to 250 pounds. My heaviest breeding ewe last winter weighed 211 pounds. My flock of store sheep and breeding ewes usually shear from 5 to 7 pounds. My ram fleeces sometimes weigh 10 pounds unwashed, and will sell in this condition for 25 cents per pound. I never feed my store sheep and lambs with grain, but give them early-cut hay and occasionally a few roots.

A few sheep of the black-faced heath breed were imported in 1859 by Sanford Howard for Isaac Stickney, of Boston, but in 1860 the Hampshires and Shropshires had not made their appearance in Massachusetts. The prevailing breeds were the Leicesters, the Southdowns, and the Cotswolds.

In 1860 the fine-wool industry had greatly declined, and a committee

*Report of the Massachusetts Board of Agriculture, 1860.

of the board of agriculture reported that the sheep husbandry of the State was tending with a remarkable directness and rapidity to the growing of coarse and middle-wooled sheep for their flesh, and to the exclusion of those breeds raised only for their wool all over the State, except on the mountain ranges in the western part, where remoteness from market and extensive tracts of rough pasture still maintained a limited number of Merino flocks. Among the causes to which these changes were traceable the committee noted the fluctuations in the prices of fine wool, varying from 54 cents down to 28 cents during the period from 1840 to 1860; the uncertainty of disposing of the clip; the impossibility of competing with the immense sheep-walks of the West and South, and Australia; the disproportionately increased expense, trouble, and loss in a large flock of fine-wools over a smaller and more profitable flock of mutton sheep; the ready sale and quick returns for mutton and lamb, and the destruction of sheep by dogs.

Other reasons submitted in this report were that the demand for wool was more particularly for middle and coarse grades, which found a surer and steadier market than fine wools. The prevalence of pleuro-pneumonia among the cattle of the Commonwealth had in a very marked manner turned the attention of farmers to sheep-raising as being a safer as well as more profitable investment. But the most satisfactory reason was found in the steady, gradual demand for mutton and lamb in the markets, an increase in a much greater ratio than the population, going to show that the people were rising in their appreciation of that excellent article of food. The extent of this appreciative growth is shown by a quotation:

> At Brighton, on the market day previous to Christmas, 1839, two Franklin County men held 400 sheep, every one in the market, and yet so ample was that supply and so inactive the demand, that they could not raise the market a half cent a pound, and finally sold with difficulty. Just twenty years after that, at the same place, on the market day previous to Christmas, 1859, 5,400 sheep changed hands from the drover to the butcher.

In 1860 the sheep of all kinds numbered 123,445, yielding 377,267 pounds of wool, showing a loss of 22,000 sheep and 40,000 pounds of wool since 1855. The loss was principally in fine sheep, the coarse-wooled and middle-wooled exceeding the fine-wooled by nearly that number. The demand for wool was on the increase, and the prices more uniform than for many years previous, particularly for middle and coarse wools, which found a surer and steadier market than fine wools. The war of the rebellion suddenly increased the demand for woolen goods of all kinds, sheep husbandry revived, the value of sheep of every description was greatly enhanced, and the production of wool was a vital interest. Sheep increased from 123,445 in 1860 to 169,442 in 1865, producing 596,808 pounds of wool. The fine-wooled sheep numbered but 58,554, the coarse and middle wooled 110,888. The fine-wooled averaged $3\frac{85}{100}$ pounds of wool per head, the coarse-wooled $3\frac{33}{100}$ pounds

of wool per head, and the average price of wool in 1865 reached 76 cents per pound. Up to 1860 fine wool was the wool for the market, but the war called for army goods made of coarse grade wool of long staple, and from all the lots coming into the hands of dealers the fleeces possessing these qualities were carefully selected and a high price obtained for them. At the same time the demand for the finest grades was good, but the demand for the medium grades was not so good. The two extremes, the long coarse and the fine, commanded the highest prices. After the war the worsted manufacture revived and a demand grew up for another grade of wool, a combing wool, and these wools commanded the highest prices in 1868 and 1869. The chief characteristics of combing wool are a long, moderately fine staple of strong fiber. Massachusetts but feebly supplied wool of any kind. Her sheep diminished rapidly from 169,442 in 1865 to 58,773 in 1875, and to 55,140 in 1885, producing only 44,000 pounds of fine wool and 213,000 pounds of coarse wool.

The decrease in fine-wooled sheep was very marked, and so indeed was that of the coarse-wooled. The great capacity of the West for the production of fine wool, with free lands on which to feed their sheep, and means of transportation, rendered competition out of the question; on the other hand, the increased consumption of mutton and lamb at the East developed coarse and middle-wooled sheep husbandry by which the market was supplied with choice meat and the manufacturer with combing and delaine wool. Franklin County, in 1880, made more than one-fourth of all the mutton produced in the State, and its fat lambs, nearly 10,000 of them, outnumbered those of any other county. Its sheep husbandry may be taken as the type of that of the State. Here the Downs are taken as the basis of the business of keeping sheep, raising early lambs, and making mutton. Southdowns are preferred. Shropshire or Oxford Down rams, when they can be had, crossed in add size and wool without detracting from the splendid mutton qualities, aptitude to fatten, quiet disposition, and perfection of form for the butcher, with tendency to twins, and great capacity for milk found in properly bred Southdowns. Many of the farmers like to take a cross of Cotswold, Leicester, or Lincoln for size of carcass and length of staple in the fleece. For a good strong pasturage the Cotswold was thought to be the best sheep for wool and mutton. The grades grew to good size, made early lambs, and yielded a good carcass of mutton and had a heavy fleece of a fair quality of combing wool. But the capacity of the pastures generally was not sufficient to carry so heavy a sheep as the Cotswold. They deteriorated on light pasturage. A class of large graded Merinos, supposed to be from the French, was held in much esteem by some, as producing large lambs with more fleece. James S. Grinnell, who made the annual report on live stock to the Massachusetts Board of Agriculture in 1880, says:

> Unwise, thriftless, and stupid as has been the course of many of our farmers to quit entirely a paying and pleasant branch of farming if judiciously conducted, the few

who have continued in it have, by their skill and good judgment, partially redeemed us and have shown what may be done. They have made their sheep to average (Franklin County, 1880) $4.50 each, which in 1845 were valued at $1.67 each, and the lambs, then worth $1.50, they have brought to the average of $4.50 each, and no end to the demand. The wool, too, from these sheep has come to 4 and 6 pounds, worth 42 cents, against 2 pounds and 14 ounces at 38 cents, in 1845.

In the closing words of his report Mr. Grinnell presents the reverse of the picture:

We can not, however, expect to have this line of profitable farm industry extended as it should be, until an anti-canine millenium shall dawn on our great and general court, and give them light and sense and independence enough to legislate for the protection of our harmless, necessary sheep, against the bloodthirsty, carnivorous brother of the wolf. Each succeeding year seems to be harder for sheep-raising than the previous one; and we almost despair of relief as we see in the indifferent legislator the grasping dog-owner and pot-hunter, and an occasional selfish farmer, who, having lost no sheep himself, desires a repeal of all dog laws—a trinity for the encouragement of mischief and the suppression of industry.

It is the general opinion among observing people that the degree of civilization or culture of the rural population is shown by the proportion of sheep-killing or mongrel dogs that are permitted among them. Massachusetts had 3 per cent of her sheep killed by dogs in 1890, and yet, says a recent publication, "when it was proposed to muzzle all dogs in the State ladies attended the sitting of the Senate chamber with poodles in their laps, and an eloquent speaker made such a moving address on cruelty to animals that members were observed to weep." The country in the vicinity of Fitchburg, Worcester County, is well adapted to sheep-raising, and that county in 1836 raised 28,276 sheep, against 3,224 in 1885. At a fair and cattle show held some time since at Fitchburg no premiums were paid for sheep, but $2.25 was paid for St. Bernard dogs and 50 cents to a pug pup. The secretary of the Massachusetts board of agriculture reported in 1889 that sheep husbandry would be profitable were it not for the increasing ravages of dogs, and that it appeared to be only a question of time when sheep would only be kept on the farms of those who could afford to guard them from the ravages of dogs by shepherds.

The value of sheep as fertilizers was early recognized in Massachusetts, and the valley of the Connecticut furnishes an instructive lesson of the benefits of the sheep husbandry to the tobacco-grower. Prior to 1869 long-wooled sheep were imported from Canada and fed upon the tobacco lands as one of the most efficient and economical means of supplying abundantly the animal manures required for the successful cultivation of tobacco. This practice was found so profitable that it was quite generally followed throughout the Connecticut Valley, both in Massachusetts and Connecticut. Mr. J. F. C. Allis, of East Whately, Mass., made a statement in 1878 of the plan pursued by himself, which may stand as the course followed by other practical farmers engaged in that industry:

We feed from 200 to 600 sheep, buying in the fall and selling in the spring. We

have bought, directly after shearing, of Michigan farmers, and had the sheep pastured till November. By early selecting and buying we are more sure of getting the best sheep, and more easily obtain all wethers, and usually at minimum cost. Merinos crossed with long-wool sheep weighing from 90 to 110 pounds, from 3 to 5 years of age, are the kind we select, as they take on fat easily, and their mutton is preferred in New York and Brighton markets. Long-wool sheep, as we think, are not good feeders; they do not take on fat so easily; and, although they cost more, will not sell higher when we are ready to market them.

We keep our sheep under cover, and commence to feed lightly about December 1, yarding them close, from 40 to 50 in a pen, always keeping them well bedded with wheat and rye straw or coarse hay. We commence to feed the sheep light with grain, gradually increasing till they eat 1 quart each daily; we seldom give more; the object being to give them all they will eat without cloying.

In 1871 we fed 200 sheep from December 1, and 85 more from December 24, and sent them to Brighton market April 10, 1872. We fed 725 bushels of corn, with 15 tons of hay. From 1865 to 1873 Massachusetts Connecticut River valley farmers fed from 8,000 to 10,000 yearly, mostly coming from Michigan, some from Ohio; but Michigan Merinos crossed with long-wooled sheep are considered the best feeders.

During those years sheep for feeders found a ready sale, and agents from tobacco-growers would take from one to two months in marketing flocks, and would car them here 1,000 to 2,000 at a time.

Since 1873, owing to financial causes and their effect, and almost always lower markets for the same class of mutton in the spring than in the fall, the number fed has gradually decreased, till last year only about 2,000 were fatted. Farmers were satisfied to feed when they would receive pay for grain, considering the manure would pay for hay and care of sheep. During the best year of feeding, sheep would sell in the spring for double the price paid in fall; the average price one-third more. Since 1873 more caution has been taken, the pressure of time being too hard for profitable sheep-feeding.

The cause for feeding so many sheep for their mutton in this valley is the high value of the sheep manure for tobacco-growers, it having the effect on our light soil to produce dark-colored silky leaf, of good burning quality, suitable for wrapping fine cigars; the tobacco burns white, and has a good, sweet flavor, perhaps owing to the potash it derives from the manure. So valuable do we consider this sheep manure that we have shipped, since 1870, from West Albany, from 50 to 150 cords, costing from $8 to $10 a cord, every spring. On our light soils, called pine lands, after raising crops of tobacco, 2,000 pounds to the acre, we have sown wheat, yielding 30 bushels plump berry, and heavy weight of straw, on land which, without this dressing of manure, is fit only for white beans. We of late years feed with our sweetest and finest hay, and mix with our corn one-third cotton-seed meal. By so feeding our sheep fatten more easily, being more hardy and better conditioned, besides increasing the value of the manure and rendering it more full of plant food.

Farmers in hill towns, and some in the valley, are keeping ewes for raising lambs for early spring market; and those farmers who have good pasturage for fall market realize for lambs of from 40 to 70 pounds from $8 to $10 each.

This branch of sheep-husbandry will undoubtedly increase among farmers, who will keep from 15 to 30 head, notwithstanding the difficulty of good pasturage and the worry and destruction caused by dogs.

Sheep invariably are the best that are penned in November and December, coming direct from pasture. Having only had light feeding of grain, they car better and are more hearty feeders. The Connecticut River fed sheep have a ready sale, at full market rates, in early and late spring, both in Brighton and New York markets.

Fattening wethers for market would rapidly increase if the spring market could be more relied upon. Perhaps this reliance will come from the increasing foreign demand for good mutton.

The Massachusetts census of 1885 gives the number of sheep in each county and the value thereof, and the amount of wool produced.

County.	Number of sheep.	Average value.	Spanish Merino wool.	Saxon Merino wool.	Other wools.
			Pounds.	*Pounds.*	*Pounds.*
Barnstable	347	$3.81	.....	.....	779
Berkshire	17,211	3.76	14,889	10,120	.....
Bristol	785	3.52	235	85	2,166
Dukes	9,038	2.21	158	.....	33,906
Essex	1,776	4.73	775	190	6,507
Franklin	11,526	3.66	6,355	3,340	39,710
Hampden	3,399	3.64	659	810	13,369
Hampshire	5,027	3.70	2,572	506	24,599
Middlesex	1,091	7.47	325	322	5,127
Nantucket	415	4.16	.....	.....	1,658
Norfolk	206	3.88	25	.....	498
Plymouth	1,069	4.32	833	69	3,121
Suffolk	26	3.00	.....	.....	.....
Worcester	3,224	5.56	912	1,400½	15,590
Total	55,140	3.64	27,738	16,913½	212,893

The following table shows the number of sheep in the State of all kinds, and the wool product at different periods from 1830 to 1890:

Year.	Spanish Merino and grades.	Spanish Merino wool.	Saxon Merino and grades.	Saxon Merino wool.	All other kinds of sheep.	Coarse and medium wool.	Sheep of all kinds.	Wool of every kind.	Yield per head.
		Pounds.		*Pounds.*		*Pounds.*		*Pounds.*	*Pounds.*
1820	.....	.....	.....	.....	.....	.....	360,682	963,841	2.78
1838	.....	.....	.....	.....	.....	.....	384,614	1,056,327	2.74
1840	.....	.....	.....	.....	.....	.....	378,226	941,906	2.50
1845	165,428	487,050	33,875	93,218	155,640	435,962	354,943	1,016,230	2.86
1850	.....	.....	.....	.....	.....	.....	188,651	585,436	3.11
1855	65,584	188,504	6,806	14,549	72,825	213,103	145,215	416,156	2.88
1860	.....	.....	.....	.....	.....	.....	123,445	377,267	3.05
1865	55,428	221,354	3,126	10,804	110,888	364,650	169,442	596,608	3.52
1870	.....	.....	.....	.....	.....	.....	78,500	306,659	3.90
1875	14,456	70,927	1,631	6,430	42,686	129,578	58,773	206,935	3.52
1880	.....	.....	.....	.....	.....	.....	67,979	299,089	4.04
1885	5,969	27,738	.....	16,913½	.....	212,893	55,140	257,544½	4.67
1890	.....	.....	.....	.....	.....	.....	56,530	296,787	5.25

The number of sheep here given for 1890 is the estimate made by the United States Department of Agriculture. The returns of the State assessors show but 45,899. The breeds are not given, but there has been a decline of the Spanish and Saxony Merinos greater than in those of English descent. Mr. James S. Grinnell, of the State Board of Agriculture, doubts if there is among the 1,000 Saxonies estimated one genuine pure-bred Saxony, and the number of pure-bred Spanish Merinos is confined to some half dozen flocks.

The average price of Massachusetts wool was 36 cents per pound in 1845, 37 cents in 1855, 76 cents in 1865, and 41 cents in 1875; and in the latter year there was a close approximation in price of the various wools. The finest Saxony was 44 cents, the Spanish Merino 42, and the coarse and middle wools 41 cents. The sheep also differed but little in price, the Saxony Merino grades $4.90, the Spanish Merino $4.03, and the long-wooled mutton sheep $4.21.

The Spanish Merino sheep introduced into Massachusetts by Seth Adams in 1801, and by others from that time to 1811, weighed about 110 pounds for the rams and 62 pounds for the ewes. The rams gave from 6 to 9 pounds of unwashed wool, the ewes from 5 to 8 pounds. In 1891 the rams have a live weight of 115 to 160 pounds and give fleeces weighing from 16 to 33 pounds, the ewes having a live weight of 70 to 90 pounds and yield fleeces of 15 to 21 pounds.

The Spanish Merino and its grades form but small part in the economy of the State. Of the whole number in the State they constitute less than 5 per cent; sheep of English blood about 95 per cent. The wool is 80 per cent clothing and delaine, such as is raised on a Southdown cross. At the sheep exhibit of the agricultural fair at Boston, 1889, there were 44 pens of Cotswolds, Hampshires, Shropshires, Southdowns, and Dorsets, aggregating more than 150 animals, but there was not one Merino.

The most profitable branch of sheep husbandry in Massachusetts at the present day, and also the most fascinating because it requires skill in management and pays handsomely, is the growing of early lambs for market. For this purpose Ohio, Michigan, and Canada grade ewes are bought late in summer or early in the fall and put to a Southdown, Hampshire, or other ram of improved mutton breed. The ram chosen stands wide on his legs, and the latter straight up and down, topped with swelling quarters; thick through the heart; bright, game eyes. Health, vigor, and muscle are deemed of paramount importance in both the sire and dam of early market lambs, hence they should have all the exercise obtainable within the limits of the farm. The ram is usually fed well on oats, pumpkins, green corn fodder, or clover hay. The lambs are dropped from January 1 to March 15; some growers have them earlier. A grower in Franklin County presents the cost and returns on early lambs:

Keep of the ewe in summer	$1.00
Keep of the ewe in winter	2.50
Feed for lamb	$2.00 to 5.50
Received for the lamb	7.70
Received for the ewe fleece	1.60 to 9.30

There remained the old ewe with the manure.

One of the most successful sheep breeders and importers of New England is Mr. E. F. Bowditch, of Framingham, Mass. Mr. Bowditch is also very successful in raising early lambs. He has a farm of 500 acres near South Framingham. In summer and early fall a flock or flocks of sheep, aggregating about 600, have the run of the fields; in winter they are driven into sheds. The sheds, two in number, and 350 and 270 feet long, are subdivided into pens, in each of which are 30 to 40 sheep. The sheds have also a number of box stalls for rams, ewes that refuse to own their lambs, and sheep that need doctoring. In connec-

tion with these are shearing rooms and storage quarters. Mr. Bowditch kindly furnishes some details of his management:

I find that a good sized, rugged, well built, grade Down ewe bred to a Hampshire ram gives me the best and quickest returns in early lambs. My ewes are coupled at beginning of July and the ram is taken away from the flock the 15th of October. We have a few early lambs in December, many more in January, but most of them in February and early March. I generally run a flock of from 600 to 700 grade ewes and keep a little flock of 50 or more thoroughbred Hampshires. In summer, if on good pasture or full supply of green foliage, I feed very little grain; if overstocked I make the ration up with grain, so as to keep my ewes on the gain rather than on the lose. As soon as the pasture becomes thoroughly frosted, I at once yard my sheep for the winter and they are never allowed to go outside the yard until the next spring. I feed before lambing, cut corn stalks, late sown barley, as well as peas and oats, the latter being a most valuable crop when cured for winter feeding. With this dry forage I add a mixture of cob meal and bran—very nearly equal parts—with the addition of a little old process linseed-oil meal, giving of the mixture enough to keep my ewes in the proper condition. As soon as the ewes drop their lambs they are changed into a separate pen and fed with the best of early cut hay and rowen, and all the grain they will eat of this before-named mixture. In one corner of the pen a small rack to hold rowen and a trough for grain is placed, separated from the rest of the pen by a fence, which prevents the ewes from coming in, but allows the lambs free entrance at any time. The mixture of grain I give my lambs is three parts finely ground corn meal to one part old process linseed-oil meal. If a lamb is from a ewe which is a large milker, with the treatment above named, we expect him to be ready for market at fifty days old and to dress 25 pounds. The price received from the lamb would vary from $8 to $10 the 1st of February down to $5 or $6 the 1st of May, prices being influenced, as in everything else, by the demand and supply. One secret which must be observed with the lambs as well as with the sheep is, they must have a good supply of pure water, good ventilation, and be kept cool and dry.

Mr. Bowditch keeps running water in each pen, and states that a sheep will drink from 4 to 6 quarts daily. Everything is carried on in a systematic and business-like manner and the profits of the business are very gratifying, running from 40 to 60 per cent. Mr. Bowditch does not devote himself exclusively to early lamb raising, but takes interest in the thoroughbred Hampshires and horned Dorset sheep, keeping flocks of each. He imported the horned Dorsets as early as May, 1887, being among the earliest importers to make a direct importation into the United States, the importation being from the flocks of Thomas Chick, Stratton, Dorset, England. He has also done much by his writings and lectures to revive an interest in sheep culture in Massachusetts and throughout New England, and believes that sheep raising is not only profitable, but almost indispensable to help to bring up New England agriculture to its proper condition.

There is a growing sentiment among intelligent Massachusetts farmers that keeping sheep for the good they do the soil is becoming a necessity; that the soils of New England can be kept up only by the plan pursued in Old England, an advanced system of sheep husbandry and agriculture. Where the relations are reciprocal, the land supports the sheep and the sheep maintain the land. The profits must come in this order: First, in the improvement of pastures; second, in the sale of

early lambs; third, in the sale of yearling lambs and fat ewes, and fourth, in the sale of wool. The raising of wool alone is not profitable, but it would pay to raise the sheep if they had no wool.

Some feeding experiments, conducted by the Massachusetts State Agricultural Experiment Station, supplement Mr. Bowditch's practice. These experiments were devised for the purpose of ascertaining the cost of feed, when fattening lambs for market by means of winter fodder rations. Six grade lambs, three ewes, and three wethers, bought September 4, 1889, of a farmer of the vicinity, served for the experiment. They consisted of five Hampshire Down and one Merino grades. Each animal occupied, during the entire period of observation, a separate pen. They were shorn before being weighed at the beginning of the experiment.

The daily diet of the entire lot consisted, during the first week, of rowen. They were subsequently treated in two divisions, each comprising three animals. This division was made for the purpose of comparing the effect of two distinctly different daily fodder rations on the financial results of the operation. The first division, a wether and two ewes, received a daily diet much richer in nitrogenous food constituents than the one adopted for the second division, one ewe and two wethers. This was brought about by feeding to the first division, as grain feed, a mixture of wheat bran and of gluten meal, and to the second division one consisting of a liberal proportion of corn meal with some wheat bran and gluten meal. The coarse portion of the daily feed was in both cases essentially the same, namely, either rowen, or rowen and corn ensilage, or corn ensilage alone. It was cut before being mixed with the grain feed when fed. The daily fodder ration was divided into three equal parts and fed respectively in the morning, at noon, and in the evening. The amount of feed left unconsumed, if any, was collected each morning and deducted from the daily ration offered the preceding day for consumption. The observation, in case of the first division of lambs, one wether and two ewes, were continued for 152 successive days—September 5, 1889, to February 4, 1890—while in case of the second division, one ewe and two wethers, they were extended to March 18, 1890, and lasted thus for 194 consecutive days. Low rate of increase in live weight and local market condition advised the extension of the trial in the latter case.

The three lambs of the first division, fed on richer nitrogenous food, gained within 152 days in live weight in the aggregate 107½ pounds, or each individual on an average 35.8 pounds; while those of the second division gained during 194 days in the aggregate only 86 pounds, or each individual on an average 28.7 pounds. The gain of live weight during the experiment of each division and each animal is here shown:

DIVISION I.

[Time of observation extended over 152 days.]

Experiments in feeding.	1. Live weight at the beginning of the experiment.	2. Live weight at the time of killing, before shearing.	3. Gain in live weight during the experiment.
	Pounds.	*Pounds.*	*Pounds.*
1	79.00	118.25	39.25
2	66.00	98.50	32.50
3	70.75	106.50	35.75
	215.75	323.25	107.50

DIVISION II.

[Time of observation extended over 194 days.]

Experiments in feeding.	4. Live weight at the beginning of the experiment.	5. Live weight at the time of killing, before shearing.	6. Gain in live weight during the experiment.
	Pounds.	*Pounds.*	*Pounds.*
4	67.50	102.50	35.00
5	66.25	86.50	20.50
6	78.75	109.50	30.75
	212.50	298.50	86.25

	Pound.
Division I. Entire lot gained in live weight on an average per day	0.706
Division II. Entire lot gained in live weight on an average per day	0.445

The amount of raw wool secured after the close of the experiments.

DIVISION I.

Experiments in feeding.	1. Live weight with wool.	2. Live weight after shearing.	3. Amount of wool obtained.	
	Pounds.	*Pounds.*	*lbs.*	*oz.*
1	118.25	114.38	3	14
2	98.50	94.60	3	15
3	106.50	102.00	4	8
	323.25	310.98	12	5

DIVISION II.

Experiments in feeding.	4. Live weight with wool.	5. Live weight after shearing.	6. Amount of wool obtained.	
	Pounds.	*Pounds.*	*lbs.*	*oz.*
4	102.50	99.25	3	4
5	86.50	82.00	4	8
6	109.50	105.00	4	8
	298.50	286.25	12	4

The first division yielded 12 pounds 5 ounces of wool; the second division 12 pounds 4 ounces; the first the result of 152 days' growth and the latter that of 194 days. Lamb No. 5 was a Merino grade, which it will be noted made the least gain in live weight; the others were Hampshire Down grades.

The difference between the live weights of the animals of the first division, at the close of the experiment, after shearing, and the dressed lambs when sold, amounted on an average to 44.3 per cent.

Yield dressed weights.

1. 66 pounds, at 11 cts. per pound	$7.26
2. 54 pounds, at 11 cts. per pound	5.94
3. 60 pounds, at 11 cts. per pound	6.60
180 pounds	19.80

The difference between the live weight of the animals of the second division, at the close of the experiment, after shearing, and the dressed lambs when sold, amounted to 46.3 per cent.

Yield of dressed weights.

4. 54 pounds at 11 cts. per pound	$5.94
5. 46 pounds at 11 cts. per pound	5.06
6. 60.50 pounds at 11 cts. per pound	6.65
160.50 pounds	17.65

The wool was sold at 22 cents per pound and the pelts at 12½ cents each, and the financial results of the experiment are thus stated:

DIVISION I.

Cost of lamb, feed consumed, etc.	1.	2.	3.	
Cost of lamb	$4.10	$3.41	$3.62	$22.85
Cost of feed consumed	4.53	3.11	4.08	
	8.63	6.52	7.70	
Value received for meat	7.26	5.94	6.60	28.55
Value received for wool and pelt	.98	.99	1.11	
Value of obtainable manure	2.19	1.52	1.96	
Difference in favor, $5.70	10.43	8.45	9.67	

DIVISION II.

Cost of lamb, feed consumed, etc.	4.	5.	6.	
Cost of lamb	$3.49	$3.43	$4.08	$22.09
Cost of feed consumed	4.24	3.03	3.82	
	7.73	7.46	7.90	
Value received for meat	5.94	5.06	6.65	25.17
Value received for wool and pelt	.80	1.11	1.12	
Value of obtainable manure	1.71	1.23	1.55	
Difference in favor	8.45	7.40	9.32	3.08

The conclusions drawn by Prof. Goessmann from these experiments were that the superior feeding effect of a daily diet rich in digestible nitrogenous food constituents when raising lambs for the meat market was well demonstrated in Division 1 as compared with those in Division 2; that the good services of the particular fodder rations used in case of the first division of lambs is shown by the fair rate of increase in live weight; that corn ensilage as a substitute in part for rowen gave very satisfactory results; and that the profit obtained with reference to both divisions of lambs was due to the commercial value of the fertilizing constituent contained in the obtainable manure. This value in the case of the first division of lambs was $5.67. To appreciate this value properly it needs to be considered, that in determining the financial results of the experiment all home-raised fodder articles were counted on the basis of their retail selling price in the vicinity of the experiment station. Sheep are known to produce one of the best homemade manures.*

Regarding the manurial value of hay it has been stated by Prof. Goessmann, in one of his many valuable contributions to agricultural science, that a ton fed to stock upon the farm returned more than 60 per cent of its value to the farm, or in other words, that from $5.93 to $9.60 worth of fertilizing constituents, or, as an average for a quarter of a century shows in New York, $6.37 went in every $10 worth of hay sold from the farm. And yet our farms need this very fertility material which this hay contains, and which, by feeding it to sheep or cattle, might be kept upon the farms and largely increase the fertility of our lands. How many farmers are there who, when carrying $20 worth of hay to market, reflect that they are robbing their ground of over $13 worth of its value had the hay been fed to stock?

That intelligent sheep-breeding can be made to pay in Massachusetts is well demonstrated by some figures given in the report of the board of agriculture of that State for 1891:

A farmer had 21 breeding ewes in 1890. They were high-grade Southdowns, upon which were used the very best of pure-bred Southdown rams. They were fed upon rowen twice a day during the winter till the 1st of March. After that they were fed oftener, and a daily ration of grain was added, consisting of bran, 4 quarts, oats, 4 quarts, and corn, 2 quarts. They were turned to pasture May 1. The receipts that year were as follows:

28 lambs, average weight, August 1, 91 pounds, 6½ cents per pound	$165.62
168 pounds of wool, at 22 cents	36.96
	202.58

or nearly $10 per head. The expenses—

Grain fed	$9.00
Hay, 6½ tons, at $10 per ton	63.00
Pasturing 21 sheep 28 weeks, 5 cents per week	29.40
Service of ram	5.25
	106.65

*Bulletin No. 37, July, 1890, Massachusetts State Agricultural Experiment Station.

Leaving a balance of receipts above expenses of $95.93, without including the value of the manure, which was a fair equivalent for the labor, the gentleman who made the report stating that he would gladly care for 1,000 sheep for one-half the manure, if anyone would furnish the hay and grain.

Another case is where the person raised early lambs or spring lambs, which were sent to market without ever being turned to grass. In this case the lambs were dropped in December and carried to market in March and April; the flock numbered 17 breeding ewes. The receipts from these 17 ewes were as follows:

150 pounds of wool at 23 cents	$34.00
16 lambs at $9.06¼	145.00
3 lambs at $5	15.00
	194.50

Estimate of expenses.

5.1 tons of hay at $10 per ton	$51.00
Grain for sheep	25.50
Grain for lambs	16.00
Pasturing 17 sheep 28 weeks, at 3 cents each	14.28
Service of ram	4.25
	111.00

Balance of receipts above expenses $83.47. In this case there were no lambs to be pastured, and the ewes could be pastured for about one-half the cost of those that have lambs, as lambs must have the best of pasture. The flock was produced by crossing a Spanish Merino ram upon grade Cotswold and Leicester ewes, weighing from 125 to 150 pounds. They dropped their lambs very early, most of them in December, were ready for market early, and brought better prices than those dropped later.

The third flock consisted of 53 ewes, 6 lambs, and 1 ram, making 60 in all. The expenses were:

Grain for sheep and lambs	$104.50
Hay, estimated at $2 per head	120.00
Pasturing 60 sheep 28 weeks at 3 cents	50.40
Services of ram	13.25
	288.15

The receipts for lambs and wool were $629.50, or almost $10.50 per head, and the receipts above expenses $341.35.

These sheep were the Vermont Merinos, the ewes weighing 100 to 110 pounds each, shearing probably 8 to 10 pounds of wool each. They dropped their lambs in November and December. The ram was a pure-bred Southdown.

The Americans have yet much to learn in the science of farming, and England is a good object-lesson. Old English farms which have been tilled for centuries show no signs of running out or of old age. They produce five times the amount of wheat per acre that they did three hun-

dred years ago, and they are constantly increasing in productiveness. British writers and farmers declare that "the sheep is literally the basis of English husbandry; that they have become an indispensable necessity, as there is no other means of keeping up the land." The secret of success in English husbandry is ascribed to turnips and sheep. The turnips make mutton and the sheep make wheat. No country of like extent breeds sheep so extensively, and no country exceeds it in agricultural wealth. There seems to be no valid reason why the keeping of sheep would not have the same results on the soil of Massachusetts and other States as it has in England.

Sheep have no equals as improvers of old pastures—those which do not and can not carry more than half or two-thirds as much stock as they did formerly. It is calculated that where once in Massachusetts, and elsewhere in New England, 60 acres were ample for a certain number of live stock, now 100 acres barely suffice, a loss equivalent to 2 acres in every 10.

Horned cattle, especially cows in milk, soon graze out the available phosphates—bone-forming and milk-supplying elements—and with the cropping out of the phosphates, the succulent and nourishing grasses give place to sour grasses, tap-rooted weeds, coarse herbage. Many of these, which hunger can hardly compel a horse or cow to eat, are eaten by sheep with avidity. It is found by actual test that sheep will eat some 140 kinds of herbage which other pasture-fed animals refuse. Of all the domestic animals sheep are the most indiscriminate feeders, as well as very close feeders. They nip the shoots of almost every shrub and weed and extirpate many kinds in a very few years. It is said that by sheep-feeding pastures their productiveness may be increased 5 per cent per annum, or brought up to carry double the stock in twenty years. But their usefulness in improving pastures is not restricted to that of weed-destroyers; their manure, which is a highly concentrated form, is minutely divided and evenly distributed over the soil surface, where it suffers no waste, while it possesses in the highest degree the requisite essentials to restore to the soil the phosphates which it loses by depasturing with cattle. This, in England, is so well understood that they turn it to greater advantage by feeding them with oil-cake when in pasture to give their droppings an additional value. They are powerful digesters, not only converting the driest and coarsest herbage into food, but destroying the vitality of everything they consume; and thus they do not, like cattle, scatter foul seeds behind them, while from whatever is eaten they extract more nutritive matter than any other animal.*

The soil-invigorating power of sheep is so great "that a pasture sufficient to feed 1,000 sheep the first year, as a result of their own droppings, will feed 1,365 the next year, or 4 sheep will highly manure 1 acre of land per year." Another estimate is that 100 sheep in fifteen days would enrich an acre of land sufficient to carry it through 4 years' rotation. The Italians have a proverb that "a sheep is the best dung cart," the proof of which can be shown in the fact that 36 pounds of sheep excreta are equal as a fertilizer to 100 pounds of ordinary farm-yard manure, being richer in nitrogenous substances than that of the cow or horse, ranking next in ammonia and richer in the phosphates than guano or the droppings of fowls.

* Samuel Wasson, in Report of Maine Board of Agriculture.

Massachusetts grows less than 2.1 ounces of wool to each of her inhabitants—not enough to supply them with ear-tabs. In 1890 she had but 56,530 sheep, not enough to give her adult inhabitants meat for two days. Of 538,490 sheep consumed in Boston in 1888, but 9,051 were raised in the State. The source of her supply for that year, and running back to 1882, is given in the following table:

States.	1888.	1887.	1886.	1885.	1884.	1883.	1882.
Maine	19,080	38,635	40,758	16,027	4,769	9,482	36,656
New Hampshire	21,223	24,541	33,946	44,870	47,974	44,793	45,170
Vermont	56,167	59,254	65,574	103,659	101,905	100,396	113,369
Massachusetts	9,051	9,005	9,776	8,527	10,742	7,435	7,616
New York	11,391	15,945	46,020	29,764	34,330	31,115	34,883
Western States	338,820	367,209	285,201	403,700	335,758	427,078	345,777
Canada	82,758	76,707	42,812	33,299	32,563	28,491	43,137
Total	538,490	591,476	524,089	639,847	568,041	648,790	626,608

In 1890 the number of live sheep discharged at Brighton and Watertown was 583,545, of which the West furnished 370,067, Canada 88,313, Massachusetts 6,181, Rhode Island and Connecticut 48 head. The receipts in March show about 5,000 head, and in September and October about 17,500 head, indicating a growing demand for mutton.

From 1890 to 1892 there has been a slight increase in the number of sheep in the State, and there are indications that farmers are beginning to pay more attention to them. Those in the vicinity of large cities find increasing demand at fair prices for early spring lambs, and no stock makes better returns.

CONNECTICUT.

The first flock of Merino sheep kept in Connecticut was imported by Col. David Humphreys, of Derby, in 1802, and has been fully noticed in preceding pages. From this flock are descended some of the best flocks of the present day, and nearly all claim descent from it. Humphreys sold and let his rams in Massachusetts, Rhode Island, and Vermont, and as early as 1807 sent many full and half blood sheep into Pennsylvania, Ohio, Kentucky, and Tennessee. His flock was broken up soon after his death in 1818, not, however, before it had furnished pure superior sheep to nearly every part of the Union, and in particular to lay the foundation of the best flocks of Connecticut as well as those of the whole country; but it is doubtful whether there is in existence a sheep that can establish its claim as being line-bred to any importation made prior to 1812, at least such is the opinion of undoubted authority. There is around the history of the early flocks, not only in Connecticut but elsewhere, some doubt thrown, not by wanton misrepresentation of facts, but through the loose statement of them and in many cases the want of precise information. It was not until many years after the flocks were founded that much, if any, attention was paid to pedigrees, consequently entire accuracy was not always attainable. We are led

to these remarks from the fact that, although of the flock we are first to notice there was kept an apparently strict and painstaking account from the day the first full-blood sheep was purchased in 1813 until 1830, there is yet some doubt and much controversy concerning some of the blood in it.

Stephen Atwood, of Woodbury, Conn., was in 1806–'7 a young man in the employ of Younglove Cutler, and Mr. Cutler had a flock of pure Humphreys sheep. At the expiration of his service with Mr. Cutler young Atwood purchased a ewe, and he offered to work a year longer for a ram. Whether the ewe was of full blood or not is unknown, but in his memorandum book we find entries in October and November, 1810, and in October, 1811, showing that he had several half-blood and three-quarter-blood ewes which he bred to full-blood Merino rams owned by Dr. B. Stoddard and Daniel Bacon; also that he had at least two half-blood rams that he turned in with his ewes. He had at this time probably no full-blood ewes, but he had use of full-blood rams and probably owned one. In June, 1813, he purchased a ewe from the flock of Col. Humphreys. He writes Henry S. Randall that he bought this ewe of Col. Humphreys for $120, and put her to a ram "that Younglove Cutler bought of Col. Humphreys in 1807." In 1844 Mr. Atwood said that he purchased a ewe from the flock of Col. Humphreys and put her to bucks in his immediate neighborhood, and her descendants to bucks raised from Humphreys ewes until about 1829 or 1830, since which time he used bucks of his own raising. In his memoranda he says: "Bought of John Riggs in June, 1813, one full-blooded ewe 6 years old, and put her to W. K. Lampson's full-blood buck, and in the spring following she had twins, one ram and one ewe lamb." This was generally accepted as the origin of Mr. Atwood's flock, although there are some who take exceptions to the Riggs ewe, and call attention to the fact that the age of the Riggs ewe at its purchase corresponds to the age of the ewe purchased of Younglove Cutler, and that no proof can be offered that the purchase was ever made of Riggs. But, as just said, it was generally accepted that the foundation of the Atwood Merino was the Riggs ewe bred to Humphreys bucks and their descendants to other Humphreys blood. In the Ohio Merino Sheep Register (1885) there is printed a letter written by Mr. Atwood in 1853, in which he enlarges on the purchase of the Riggs ewe, and adds: "I bought said (Riggs) ewe, and in 1819 I bought from the Lemuel Stone flock, that he raised from Col. Humphreys' flock, five ewe lambs that I selected, and with these five lambs and the ewe I bought first I have raised my flock of sheep." Controversy has been carried on regarding the flock, which we purpose to avoid. The full-blooded buck used on the Riggs ewe in 1813, and owned by W. K. Lampson, has been the subject of some controversy. It was purchased by Mr. Lampson of Daniel Bacon, and Mr. Bacon purchased him of Abraham Heaton for $350 at the sale of the sheep arriving by the *Bellona*, at New Haven,

January 3, 1811. It is claimed that this ram, which may be called the Bacon ram, was an Infantado. Such is not the fact, as the cargo of the *Bellona* consisted of Guadaloupes and Negrettis. Mr. Atwood, however, used other full-blood rams of Humphreys descent, and with the exception of the Bacon ram, and possibly a Blakeslee ram from the flock of Humphreys and Heaton sheep, he had essentially an Humphreys flock. If not pure Humphreys it approached it nearer than others at that time. But it is better known now as the Atwood Merino, the leading Merino of the United States.

Mr. Atwood began his flock with the idea of combining three properties, viz, constitution, quantity, and quality, and he succeeded in a remarkable degree. He was one of the earliest and most successful improvers of Merino sheep, and from 1844 to 1850 his sheep were in greater demand and brought higher prices than those from the flocks of other breeders, and most of the best flocks in Vermont and other States trace, in whole or in part, their pedigree to his flock.

It is of interest to note the proceeds of Mr. Atwood's shearings as recorded in his memorandum books. In 1814 the old Riggs or Humphreys ewe sheared 3 pounds 9 ounces of wool, sold at $1.50 per pound, and in 1815 she, with her twin lambs or yearlings, sheared 13 pounds—an average of 4⅓ pounds each. In 1816 the old ewe with her lambs—viz, one 2-year old ewe, one yearling ewe, one 2-year old ram, and one yearling ram—sheared 23 pounds 11 ounces, an average of 4¾ pounds, nearly. In 1820 17 full-blooded sheep sheared 70 pounds 5 ounces, or an average of 4 pounds each with 2 ounces over. In 1824 103 sheep sheared 425 pounds. Thirteen of the heaviest fleeces weighed 8 pounds 9 ounces each. In 1825 118 sheep sheared 459 pounds 9 ounces, and, like that of 1824, so entered on the memoranda that the full-blooded wool can not be separated from the other wool, but one Guadaloupe ewe is put down as giving 4 pounds 12 ounces, and another 3 pounds 15 ounces. In 1826 140 sheep sheared 545 pounds 2 ounces, but again the full-blood wool can not be distinguished from the other. It averaged 3 pounds 11 ounces, nearly. In 1828 152 sheep sheared 629 pounds 15 ounces, or an average of 4 pounds 2 ounces, nearly. In 1829 167 sheep had 640 pounds of wool, an average of about 3¾ pounds.

A comparison of these figures and others shows that Mr. Atwood made large and material improvements in the weight of his fleece. In 1814 the Riggs ewe sheared 3 pounds 9 ounces; in 1816 she sheared 4 pounds 4 ounces, and a yearling ewe sheared 5 pounds. In 1820 his heaviest ram fleece was 7 pounds 1 ounce, his heaviest ewe fleece 4 pounds 6 ounces. In 1824 his heaviest ram fleece was 7 pounds 3 ounces. In 1826 one ewe gave 4 pounds 5 ounces and several rams are recorded as giving from 4 pounds 10 ounces to 7 pounds 14 ounces. In 1828 the ram fleeces ran from 6 pounds 12 ounces to 7 pounds 9 ounces, and one ewe sheared 4 pounds 10 ounces. In 1844 Mr. Atwood's ewes sheared yearly 5 pounds of wool per head, his lambs 5 pounds each, and wethers

6 pounds; his rams from 7 to 9 pounds per head. The heaviest ewe fleece that year was 6 pounds 6 ounces, and the heaviest ram fleece 12 pounds 4 ounces. All the weights given are of washed wool, and Mr. Atwood washed his sheep as thoroughly as possible in the river, and let them run six or eight days before shearing. Add to the weights as given the usual allowance for shrinkage by river washing, which is about one-third, and the old Riggs ewe would show 6 pounds 6 ounces as her best fleece, unwashed, as against the same weight given by a ewe in 1844, of washed wool. Making the same addition for shrinkage, the last fleece would weigh unwashed 9 pounds 9 ounces. This difference of 3 pounds and 3 ounces is, then, just the amount of improvement that Mr. Atwood was able to show on his best ewe in 1816, or in twenty-eight years. In 1816, the first year in which his minutes show the weight of a ram fleece, his heaviest ram fleece weighed 7 pounds 3 ounces. In 1844 his heaviest ram fleece was 12 pounds 4 ounces. These fleeces, with the addition of the shrinkage by washing, would have weighed—the first, 10 pounds 12½ ounces, the last 18 pounds 6 ounces, or a gain of 7 pounds 9½ ounces in the period of twenty-eight years. These same memoranda, when compared with his statement to Mr. Morell in 1844, that his ewes would each shear yearly 5 pounds and his rams from 7 to 9 pounds, show that Mr. Atwood made as great proportionate increase of weight of fleece on his whole flock as on these best rams and ewes. From 1820 to 1844, while increasing his flock of full-blood ewes from 7 to 75, he improved the weight of their fleeces fully 2 pounds of washed, or 3 pounds of unwashed wool; the 7 in 1820 shearing an average of 2 pounds 15 ounces washed, equal to about 4 pounds 8 ounces unwashed; the 75 in 1844 an average of 5 pounds washed, or 7 pounds 8 ounces unwashed. In view of these facts it is certain Mr. Atwood never received full credit for the great improvements he made in the weights of his fleeces. Considering his lack of light, of examples of improvements, and the large increase of numbers of his flock, it can safely be said he deserves equal credit with noted succeeding breeders on this point.*

It were well at this point to follow the line of this improvement made by others on the Atwood sheep. In 1844 Edwin Hammond, of Middlebury, Vt., purchased 29 ewes and 3 rams of Mr. Atwood and his neighbors. The rams and a part of the ewes were from the Atwood flock, and were of Atwood's own breeding. These ewes were divided after they were taken to Vermont, but the rams were owned in company. In 1845 27 ewes and 1 ram were purchased of Mr. Atwood. Two more purchases were made in company with Mr. R. P. Hall, and one subsequently in which Mr. Hall was not interested. One of the purchases was the entire crop of ewe lambs raised by Mr. Atwood in one year. These purchases were all made of Mr. Atwood within a period of three years from the time of the first purchase in January, 1844, and formed

* Register of the Vermont Merino Sheep Breeders' Association, Vol. II.

the foundation of the flock of Atwood sheep that afterwards became so famous in the hands of Edwin Hammond. Mr. Hammond was the leading breeder of his time, and made great and rapid strides in the improvement of Merino sheep. In February, 1863, Henry S. Randall visited this flock, and states that the sheep composing it were—

large, round, low; strong-boned sheep—models of compactness, and not a few of them almost perfect models of beauty for fine-wooled sheep. They were in very high condition, though the ewes were fed only on hay. Two of these weighed about 140 pounds each. Numbers would have reached from 110 to 125 pounds. One of the two largest ewes had yielded a fleece of 17½ pounds, and the other 14½ pounds of unwashed wool. The whole flock, usually about 200 in number, with the due proportion of young and old, and including, say, 2 per cent of grown rams and no wethers, yields an average of about 10 pounds of unwashed wool per head. The ram Sweepstakes, bred and owned by Mr. Hammond, has yielded a single year's fleece of unwashed wool weighing 27 pounds. His weight in full fleece is about 140 pounds. Rams producing from 20 pounds to 24 pounds are not unusual in his flock.

This shows a great improvement, equal to that made by Mr. Atwood, but not exceeding it. From 1814 to 1844 Mr. Atwood improved the fleeces of his ewes equal to 3 pounds of washed wool, and from 1844 to 1863 Mr. Hammond did about the same, or perhaps a little less, for, according to Mr. Randall's statement, the whole flock in 1862 sheared about 10 pounds each, or only about 2 pounds 8 ounces more than Mr. Atwood's ewe fleeces, unwashed, sheared at the time Mr. Hammond purchased of him, and this statement of Mr. Randall includes the rams of Mr. Hammond's flock, which Mr. Atwood's did not.

Mr. Albert Chapman, in his exhaustive article on the improvement of Merino sheep, published in the second volume of the Register of the Vermont Merino Sheep Breeders' Association, in noticing Mr. Hammond's flock and his improvement on Atwood's sheep, says:

Mr. Atwood's heaviest ewe fleece in 1844 was equal to 9 pounds 9 ounces unwashed wool; Mr. Hammond's in 1862, 17 pounds 8 ounces, or nearly double, though just how much the heaviest ewe fleece weighed, shorn the first year after he received his Atwood sheep, we have no data to show; but all the accounts and data we have of both flocks do show that the improvements effected by both these breeders were very great, and entitle both to a large measure of praise and gratitude for the superior judgment and skill they exercised in breeding their flocks, the great improvement they effected in Merino sheep and left for the use of those who have followed them. It has been charged by some that Mr. Hammond greatly increased the size of his sheep and the weight of their fleece by introducing the blood of the French Merino into his flock of Spanish Merinos; or, as expressed by one of his critics, his sheep "took a big jump after he had wintered a French ram." Mr. Hammond never materially increased the size of his sheep. We do not believe he thought any such increase was desirable. The rams Old Matchless and Old Black were quite as large as Sweepstakes. Mr. W. R. Remele, who was a partner with Mr R. P. Hall in the sheep purchased of Mr. Atwood, and who, as administrator of the estate of Edwin Hammond, sold the main portion of the flock after his death, says the live weight of the flock at the time of Mr. Hammond's death was not individually 1 pound greater on the average than when he brought them from Connecticut in 1844. As to increasing the weight of his fleeces by a French cross, there is no probability that such a cross would have produced such a result.

Improvement in the Atwood Merino has gone on. The heaviest fleece shown by Mr. Hammond weighed 27 pounds; twenty-seven years more progress gave an average of over 31 pounds on 64 rams, 9 of which yielded fleeces averaging 36 pounds 3 ounces each. Of these nine, 6 attained fleeces the average of which exceeded 37 pounds. Nor was this confined to the rams. Ewes shearing more than 17½ pounds are common, and the records show that many have exceeded Mr. Hammond's ewes by 5 pounds more of fleece, and that in 1883 one had produced 7 pounds 8 ounces more than the best ewe fleece ever produced by Mr. Hammond.

The increased percentage of wool to the carcass also shows a great improvement. Mr. Randall stated in 1864 that 21 per cent of wool in proportion to meat had never been exceeded. The second volume of the Vermont Register (1883) shows 63 sheep averaging more than 25 per cent of wool, and 1 ram in the list yielded 15.2 per cent more wool than 21 per cent, and 5 exceeded it by more than 10 per cent. These facts show the great character of the Atwood and Hammond flocks and that of their descendants all over the United States, and the subject may be pursued here no further.

Mr. Atwood's flock usually numbered from 150 to 200, and in 1866 was divided among his three sons, Chauncey, George S., and Eben, each taking an equal third. At this time George S. Atwood bought out his brother Chauncey's interest. George S. Atwood had commenced a flock in 1839, by the purchase from his father (Stephen Atwood) of one two-year old ewe and one ewe lamb, the choice from those ages. He bred from these two and their descendants, always using his father's rams and those bred within the flock, to which was added the share coming to him from his father's flock and the purchase from his brother in 1866. In 1871 he purchased 5 ewes from the estate of his brother Eben, bred direct from his father's old flock. He used no other rams than his own until the fall of 1880, when he let his sheep out to Mr. Albert Chapman, of Middlebury, Vt., for three years. The entire flock older than the lambs (24 in number) were taken to Vermont where they remained until 1884, at which time 22 of the original ewe sheep and his share of the female increase (10) were returned to Mr. Atwood in Connecticut. In 1887 the flock numbered 20 rams and 48 ewes.

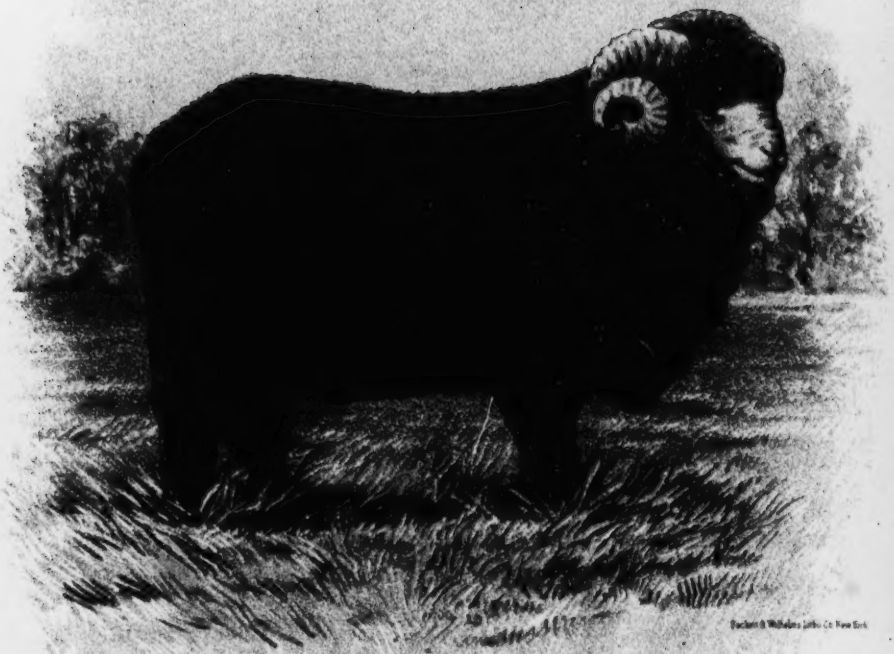
Old Black, one of the early noted stock rams of the Hammond flock, was bred by Mr. Atwood in 1841 and was sold by him to W. R. Sanford, of Orwell, Vt., who afterwards sold an interest in him to Edwin Hammond and W. R. Remele, of Middlebury, Vt., and was used by them together. His live weight was about 135 pounds and his heaviest fleece was about 14 pounds unwashed wool. He was long, tall, flat-ribbed, rather long in the neck and head, strong-boned, inclined to be roach-backed, deep chested, moderately wrinkled; his wool was about 1½ inches long, of medium thickness, very yolky, and dark-colored externally; face a little bare, and much wool on the shanks. He was not possessed of a

strong constitution; was an an admirable sire of ewes, but was not so good for rams. He was sold when 15 years old to Capt. S. Sheldon, Fairhaven, Vt., and died four years afterwards.

Old Matchless was also bred by, Mr. Atwood in 1841, and sold to Messrs. Hammond and R. P. Hall in 1844, with the first purchase of rams and ewes made by these gentlemen of Mr. Atwood. His live weight was from 135 to 145 pounds, of excellent form, commanding appearance, and strong constitution. He yielded 10¾ pounds of wool when a lamb, but his usual fleece afterwards was about 12½ pounds. His fleece was about 2 inches long, inclined to be coarse, of medium thickness, quite yolky, but thin and short on the belly. He was not well covered on the head, and was bare on the shanks. He gets large, strong, but not very well-covered lambs, and was not as good a stock ram as Old Black.

Sweepstakes was bred by Edwin Hammond in 1856, and was one of the most celebrated stock rams. He weighed in full fleece about 150 pounds, and taken all in all was about as perfectly formed Merino ram as had ever been seen up to that time, and defective in no essential particular. He had a powerful constitution. His fleece was of high style and quality, and stood up stiff and unyielding to the touch and opened in blocks or seams; oil abundant and buff in color; staple, 2½ inches long; fiber, 3½ inches long; quality of fiber about medium and very uniform throughout the fleece. He stood very straight upon his legs, and was well covered with wool at all points of the body, and profusely to the feet all around. His heaviest fleece weighed 27 pounds. He made a marked improvement in the Hammond flock, and was pre-eminently a ram getter. He won the sweepstakes premium on best ram of any age at the Vermont State fair in 1861. He was extensively used by other Vermont breeders, and by some outside the State. He had a heavy neck, tail, and flank, and had a plain body. He died at the Cream Hill stock farm, Shoreham, Vt., in 1867. The illustration presented of him is taken from the Vermont Register.

The Cook ram, yeaned in 1841, and bred by Stephen Atwood, was sold when a lamb to David and C. R. Cook, Charlotte, Vt., and used by them as a stock ram on the ewes purchased of Mr. Atwood at the same time until 1845. Little Ram, yeaned in 1841, was sold by Mr. Atwood to Messrs. Hammond and Hall, January 27, 1844, and used by them as a stock ram. Atwood, yeaned in 1842, was sold to S. L. Bissell, Shoreham, Vt., at the New York State fair at Poughkeepsie. Mr. Bissell, on the way home, sold a half interest in him to M. W. C. Wright, of Shoreham, and Mr. Wright sold a half of his interest to S. W. Jewett, of Weybridge. Soon after he was sold to L. C. Remele, of Shoreham, and Prosper Elitharp, of Bridport. This ram weighed about 100 pounds. His heaviest fleece was 15 pounds, which, after cleansing, weighed 6 pounds. He made great improvements in the flocks where he was used, and his blood has descended through the pedigrees of many of the most



HAINES, DEL.

MERINO RAM "SWEEPSTAKES."

ONE OF THE BEST IMPROVED SPANISH MERINO RAMS OF TWENTY YEARS AGO.

FROM "REGISTER OF THE VERMONT MERINO SHEEP BREEDERS' ASSOCIATION," VOL. I, 1879.

celebrated sheep of Vermont. He died in 1850, the property of Mr. Elitharp. Black Buck was sold to C. B. Cook, of Vermont, the Atwood ram sold to D. & G. Cutting, and the George Atwood ram, sold also to D. & G. Cutting, Shoreham, Vt., were additional channels through which the Atwood blood found its way into many of the Vermont flocks and laid the foundation of others.

Another noted flock of Connecticut was that of Jacob N. Blakeslee, of Watertown, and we give the history of it as furnished the Cultivator by Mr. Blakeslee in 1844:

My pure-bloods are the offspring of some of the first that ever came into the United States, brought into the country by David Humphreys in 1802, which were a present to his wife by her father. After a few years two pairs of them were purchased by Daniel Bacon, of Woodbury, Litchfield County. They were kept in their pure state till 1811. There was then an importation of the Guadaloupe sheep by a company formed in Litchfield County, John De Forest, supercargo. They arrived at New Haven, and were sold at auction January 17, 1811. There was one full-blood Escurial buck, which was purchased by Daniel Bacon at $275, and was crossed upon those sheep that came by the way of Mrs. Humphreys. He continued this cross till 1816 or 1817, when he sold his Escurial buck to William K. Lampson. He kept his sheep pure till the introduction of Saxony sheep. He then sold the remainder of his flock to Daniel Martin. I began a flock of sheep in 1815 that were imported by Peck & Atwater, New Haven. A part of them were the Negretti and a part Montarco. I let them run together till 1823. I then procured the use of a buck for three seasons, bred by Daniel Bacon from his Escurial buck. The average weight of the fleeces of the stock from this buck was 4 pounds, and the wool brought me 10 cents a pound more than the original stock. In 1828 I purchased a buck that was raised by Daniel Bacon. From that time down to the present (1844) I have kept that blood pure; this flock is now a cross of three sorts of Spanish sheep, and perfectly clear from native or Saxony blood. My farm is not a healthy farm for sheep, and of course they are a little under size. They are a full, round, handsome bodied sheep, with shortish legs and a very round neck. They have very heavy fleeces for their size. Their wool is a long staple, a great deal of crimp and very compact at the outer end. They have generally wool about their face and on their legs down to their feet. After taking great pains to wash them, the average weight of their fleeces this season was 3½ pounds, and there are very few flocks of Saxony sheep that are finer. Mr. Samuel Lawrence, of Lowell, who has had this wool for four seasons past, has given his opinion that there is no Merino wool that compares with it. This improvement has been made by a cross of the different breeds. I am decidedly of the opinion that there is no full-blood animal equal to a cross; the reason I give is that there is no perfect animal on the face of this earth; where an animal is imperfect you can never remedy the defect by the use of an animal that has the same defect.

This statement is incorrect in some points. The buck spoken of as being purchased by Daniel Bacon was not an Escurial but a Guadaloupe, and the importation spoken of as being made by Peck & Atwater was in reality made by Abraham Heaton and others, and consisted of 30 Guadaloupes and 12 Negrettis. But the main facts remain that Mr. Blakeslee's flock was made up from the two importations into New Haven, December 27, 1810, and January 3, 1811, consisting of Infantados, Guadaloupes, and Negrettis, and that afterwards he purchased rams bred by Daniel Bacon, descended from the ram imported in the *Bellona*, January 3, 1811, and described by Mr. Heaton as of superior

size and form, and by Mr. Blakeslee as the best of all the original importations he had ever seen.* On June 2, 1846, Mr. Blakeslee stated that he had been informed by Dr. Samuel Elton, who was one of the importers of the cargo of 1811, that the Bacon or Lampson buck was a full-blooded Escurial.

Mr. Blakeslee made a great improvement on his sheep. When he began his flock in 1815 his sheep averaged not far from 3 pounds of wool to the head. They were Spanish Merinos of the finest kind. By careful breeding the fleeces were largely increased. The first buck that he ever sheared gave 5 pounds. He had bucks in 1869 that sheared 11 pounds.†

Mr. Blakeslee died in 1877, and the disposition of his flock is not definitely known. Chapman says but little of this blood is now left in the flocks of Vermont, it being crossed out here as elsewhere by the Atwood and Rich blood. The more marked characteristics of his sheep were their moderate size, smooth bodies, covered with a fleece unrivaled by that of any other pure Merino family of that day for length of staple, fine, crimpy, elastic fiber with a free circulating oil that gave great softness to the feel, and brilliancy to the appearance of the whole fleece. They were somewhat inferior to the other families of Merino sheep in constitution. The great reaction from the Merino for Saxon fineness and weak constitution demanded sheep of a much more decided type for heavy fleece—strong constitution, and more of the distinguishing marks of the Merino as exhibited in heavy folds and wrinkles. For these reasons the Blakeslee blood has been bred out of most flocks until those few where it was introduced have a very small fraction of it left.‡

Of the flock of Daniel Bacon nothing definite of its early history has come down to us. From all that is known it is supposable that he commenced his flock with Humphreys sheep some time before the importations of 1810 and 1811, and that he had a full-blood ram before the *Ceres* or *Bellona* importations of December 27, 1810, and January 3, 1811, is certain from this extract from Stephen Atwood's memoranda: "October 29, 1810, took three-quarters blood ewes to Bacon's full-blood buck." And again: "November 1 (1810), took four ewes to Bacon's full-blood buck; and the smut three-eighths went to the Bacon ram November 10. Plat ewe and Beardsley ewe—two three-fourths ewes—went to Bacon's ram between the 1st of November and time of S. Atwood's ewes going to the Stoddart buck." As Mr. Atwood says he bred from Humphreys rams, this must be accepted as showing that Bacon had Humphreys rams, which is further confirmed by the statement made by Mr. Blakeslee that "two pairs of them (Humphreys sheep) were purchased by Daniel Bacon" and kept pure till 1811. Then he purchased the Guadaloupe buck and put in his flock, and from the progeny he sold,

*See further of these importations, Chapter III, pp. 200–203.

†Statement of Mr. Blakeslee at meeting of Connecticut Board of Agriculture, 1869.

‡Register of the Vermont Merino Sheep Breeders' Association, Vol. I.

October 14, 1820, a half Guadaloupe and about half Humphreys buck to Mr. Atwood, which was used by the latter in his flock. The subsequent history of this flock has been told in the statement made by Mr. Blakeslee. The chief interest attached to it arises from the presence of the Guadaloupe ram in it, spoken of by all the breeders of that day as greatly superior to any other sheep then owned in the country, and much sought after and used very generally by other breeders, among whom were both Stephen Atwood and Jacob N. Blakeslee.

There were many other flocks of Merinos in Connecticut at an early day, but the data concerning them are meager and defective. Mr. Chapman made a painstaking investigation there under many difficulties. The earliest breeders had all passed away, and, with the exception of Mr. Atwood, left no record of the origin and breeding of their flocks. Those who started their flocks a little later, if still living, had nearly all sold their sheep, and having lost their direct interest in the subject seemed to remember very little that could be used as accurate and reliable data as to times when different strains of blood from the later importations were introduced into their flocks. But he found facts sufficient to warrant him in the conclusion that most of the early Merino flocks of Connecticut were started from the importation which Col. Humphreys made in 1802, and that subsequently the blood of the Heaton or other importations of 1810 and 1811 was introduced into all those flocks, without any exception, in greater or less degree, under such circumstances as preclude the possibility of any having been kept purely or distinctively Humphreys.* Among these early breeders were W. K. Lampson, who purchased the Bacon ram; Younglove Cutler, who began with a few Humphreys sheep and afterwards had some of the Heaton importation; Lemuel Stone, of whom Mr. Atwood said he purchased Humphreys sheep in 1819; and Joseph and Samuel H. Nettleton, both of whom had flocks started from the Humphreys importation, into which was bred the blood of the Heaton importation at an early day. Twenty ewes of Joseph Nettleton's flock were sold to J. S. Pettibone, Manchester, Vt. Joseph Nettleton died in 1824 and his flock was purchased by his brother, Samuel H. Nettleton.

One of the early and choice flocks of Connecticut was that of John A. Taintor, who bred from the Paular and Guadaloupe, and which was particularly distinguished for the quantity and quality of their wool, differing from the others in a looseness of skin on the neck, with a more evident degree of throatiness. Their lambs were generally produced with a coarse, heavy appearance, which was succeeded by a coat of unusual closeness and of excellent quality. The great object he had in view when he formed his flock was quantity and quality, for with the first requisite he always found the hardiest, strongest constitutions. He endeavored to obtain a fleece that would produce the greatest profit, and so well had he succeeded that to the time when the Saxony sheep

* Register of the Vermont Merino Sheep Breeders' Association, Vol. II.

were introduced his entire flock averaged 4¼ to 4½ pounds of washed wool, and sold at 70 to 75 cents a pound. There were no wethers, and the ewes would shear from 3¾ to 4½ pounds; bucks from 6 to 9 pounds, and yearlings from 4 to 4¼ pounds. Soon after crossing with the Saxons he lost not only in the value of the fleece, but still more by feebleness of constitution. In 1833 he became satisfied of his mistake and sold out all his Saxons, reserving to himself such of his old Merinos as he could select that had escaped the general slaughter, and by repurchasing some he had previously sold formed a new flock. There was at this time in Connecticut a general disposition to get rid of the light-fleeced Saxon and replace them by the Spanish Merino.

Among the early breeders was a Mr. Wadsworth, of Middletown, Conn., who, on June 8, 1825, exhibited a ram, 6 years old, weighing 140 pounds, that had never been sheared and had not shed his wool. The length of his fleece was 17 inches, estimated to weigh 30 to 40 pounds. For fineness of texture, length of staple, and beauty of appearance, it was believed not to be surpassed by any single fleece in the country. The animal enjoyed perfect health and did not suffer from the changes and the extremes of the climate.

Although Connecticut was, in many parts, well adapted to the raising of Merino sheep, and had many factories to consume their wool, for causes operating similarly to those of Massachusetts the growing of fine wool was not successfully prosecuted, and she yielded her breeding advantages to Vermont, many of the choice sheep of her most noted flocks being taken into that State. In 1824 the Saxony Merinos were introduced into the State and most of the flocks crossed with them, that of Stephen Atwood being the noted exception. Mr. Scoville, of Salisbury, commenced a Saxon flock this year and maintained it for many years, disposing of choice animals to woolgrowers of Massachusetts and other States. Mr. Hurlburt, of Winchester, in connection with Henry Watson, of East Windsor, purchased some of the best Saxons of the first importations, and Charles B. Smith, of Walcottville, at a later day, made importations from the best Saxony flocks. In 1845 there were Spanish Merinos and Saxony Merinos of various grades disposed all over the State, but the pure blood flocks could be counted on one's fingers. In 1846 John Ward, of Salisbury, had a flock of 700 Saxons with fleeces averaging 2¼ pounds. R. G. Camp, of Litchfield, had 170 Saxons, derived mostly from the flock of Charles B. Smith. The wool was very fine, averaged 2⅛ pounds to the sheep, and sold for 66 to 68 cents per pound. Henry Watson had a flock of high grade Saxons crossed with Spanish Merino rams. The average yield of wool was 3 pounds per head, the rams giving 5 to 6½ pounds. The market for Saxony sheep from 1840 to 1850 was not good in Connecticut, but many were sold in western Pennsylvania and Ohio.

With the elimination of the Saxony opened the era of the French Merino. The orginal breeds of France have been so generally crossed

that a description of them would be attended with many difficulties. Every pasture had its favorite sheep, every district had many varieties of pasture, but it can be said upon the whole that except towards the south of the country they did not yield a fleece possessing much value for the woolen manufacture; they were in fact the kind of sheep still found in all the countries bordering the German Ocean from the Elbe to the Seine.

The first concerted improvement in the sheep of France was in the direction of better wool, and was before 1721, when some Spanish ewes were brought into the country. Towards the middle of the century other Spanish sheep were procured, and Trudaine, the French minister, imported a flock in 1776. Private individuals made importations between 1776 and 1786. In 1785 Louis XVI, who two years before had bought the domain of Rambouillet, on which he had established an experimental farm, obtained from the King of Spain permission to purchase and take from the Kingdom a flock of pure Merinos. The Spanish King gave orders that the selection should be made from the finest flocks of his Kingdom. The flock was selected around Segovia from the flocks known as the Serales, Perella, Paular, Negretti, Escurial, Alcola, San Juan, Portago, Iranda, and Salezar, and was taken by easy stages to Rambouillet, after having passed the winter in the lands of Bordeaux. About 60 died on the journey and the number arriving at Rambouillet was 366—318 ewes, 41 rams, and 7 wethers. Shortly after their arrival it was discovered that they were affected with the rot, which carried off 35 ewes and 60 lambs.

Pictet, a French writer, who paid great attention to sheep husbandry, says of this flock of Spanish Merinos, selected from 11 (10) cabañas, that there was no uniformity in their appearance or outline; some were long legged, others short and thick legged; on some the entire head and part of the face and the legs, down to the very hoofs, were covered with wool, while on others these parts were destitute; some had straight and others round faces; some broad and others narrow foreheads; some with large and others with small ears; some with a large dewlap and folds around the neck, others with none; some with rounded ribs, broad hips, and small back, others the reverse; some with bulging and others with depressed backbones.

Another writer, a few years later, said that the flock was composed of individuals of extraordinary beauty, unknown until then in all those of the same breed that had been chosen from a great number of flocks and brought from Spain at different periods. These animals were of a motley color, disagreeable to the eye, though immaterial in regard to quality; the characteristic differences were blended somewhat in the successive alliances of the individuals in which they showed themselves, and it resulted in a breed that perhaps resembles none of those of which the first flock was composed, but which yields nothing in beauty as to form, size of

body, and good constitution of the animal, and fineness, softness, and quality and quantity of wool.

The height of these sheep varied from 24 to 30 inches, the first being in places where the pasture was light, the soil dry, and the feed poor. The perfect ram is thus described by Prof. Gilbert, the manager of the Rambouillet flock:

> The highest type of ram of a pure race has the eyes extremely lively, and all his movements are quick. His face is free and rhythmical. In those of first quality the head is wide, flat, square; the lines of his front, instead of being arched and short as in the French races, are straight, rounded on both sides, and very large. His ears are very short, the horns very thick, large, full of wrinkles, and turned in redoubled spirals. The nape is very wide and thick. The neck is short, the crop round, the back well rounded, the loins wide, the dewlap hangs very low and wide. The stern is wide and round, and the legs strong, large, and well wooled. His broad body is covered with a very fine, well-crimped wool, long, soft, and compact, constituting a wool superior to all other races. It is even over all parts of his body, from his eyes to his hoofs. It is remarkably free from yolk, but with oil sufficient to promote the greatest growth, finest fiber, and most compact fleece, which always parts as a book opens. The finest ewes approximate in form the character and beauty of the finest rams.

At the time of the importation of this flock the weights of the unsheared rams were approximately 110 to 120 pounds, that of the ewes, also unsheared, was about 72½ to 88 pounds. The fleece of the rams weighed about 8$\frac{8}{10}$ pounds; that of the ewes about 7½ pounds. The wool of the ram was 2$\frac{8}{10}$ inches in length; that of the ewe 2 inches.

The flock was gradually increased, and rams and ewes were given and distributed among the farmers, and every means used to extend the breed among the agriculturists of France; but as soon as it was perceived that the unenlightened cultivators of the soil did not appreciate them, even as a gift, they were offered for sale, and the provincial administrations, then established, secured them. They were thus sent into Burgundy, Bresse, Dauphiny, Champagne, Normandy, Berry, Poitou, Picardy, Brie, Beauce, and other places where their virtue was attested by the increased value of flocks into which the blood was introduced.

The Rambouillet flock was put under the care of an agricultural commission at the beginning of the French revolution, and through all the horrors of that great popular upheaval it was preserved from dangers which on several occasions menaced it.

From the day of its foundation in 1786 to the present, a period of over a century, this flock has been conducted with the closest attention. Every particular has been noted and studied. It has been carefully guarded, and every means taken to insure its purity. The record of its progress, therefore, to the date of the introduction of some of its individuals into Connecticut and elsewhere in the United States must be stated.

Grain was fed to a very limited degree. Lucern, clover, and the good pasture of high meadows were very satisfactory to the sheep.

HAINES, DEL.

RAMBOUILLET RAM, 1787.

FROM "ANNUAL REPORT DEPARTMENT OF AGRICULTURE," 1878.

HAINES, DEL.

RAMBOUILLET RAM, 1873.

FROM "ANNUAL REPORT DEPARTMENT OF AGRICULTURE," 1873.

During the coupling season oats were given to the rams to invigorate them, under the conviction that the invigoration had a powerful influence upon the size and constitution of the lambs, and the quality of the wool. One month before lambing some bran and oats were given to the ewes. Bourgeois, once director of the flock, said that a ewe of medium size should eat 2½ pounds of grain every day; and again, that the ewes every day in lambing time should have a half-pound mixture of bran and oats, with a half pound of lucern or kidney beans and 2 pounds of one or the other of these two feedings when the flock did not go to the fields. Independent of this, 2 pounds of barley straw should be given. With this food the sheep were kept in good condition. The flock was treated in this manner for a long time, and the sheep never attained a corpulence that was excessive or prejudicial to health. They were vigorous and robust. In 1802 the average measurement of the ewes in height was 24½ inches, in 1834 146 ewes measured an average of 25½ inches. About the latter date there was a change in the management. The advanced size and fleece were respected, but the new management wanted a change in the direction of mutton. Several English breeds had been imported into France exclusively for mutton, and their cross on the Merinos, then distributed widely in some of the districts, attracted attention, and outside pressure, if we may so term it, was felt at the Rambouillet directory. They sought to have the Merinos approximate the type of those races characterized by largeness of body, beauty of form, and regularity of proportions, and to attain this object as the result of selection and high feeding. There was no question about the importance of the fleece, but they sought after good form and large weight of carcass.

In 1802 the finest ewes weighed, shorn, 90 pounds; since they suffered from the natural influence of their new habitation the average weight was 80 pounds. Their descendants in 1847 averaged 120 pounds. In this space of forty-five years the fleece had not increased materially, having only advanced from 7 pounds 9 ounces to 7 pounds 10 ounces. It is proven that these conditions depended upon the regimen of the sheep, successively fed upon substantial pasture and abundantly supplied with grain. This was a regimen for early maturity. It is probable that this tendency to produce a sheep more for mutton than for wool was not satisfactory. It is shown by attested data in 1881 that the food of the sheep had been continuously moderated, and their weight gradually resumed the limits natural to them before their importation, while some exceptionally fine sheep attained notable proportions. It must be understood that as there are precocious races which demand and must be supplied with rich food, and require to live in abundance, there are other races that are slow to develop, and are satisfied with very little, and can endure much privation. Of sheep, the Merino is of the latter type; and to develop them to the type sought, their natural environment must be changed. In a word, the Merino is a cosmopolitan race, and prospers wherever it is found. Other races will not do this; consequently, the Merino is more susceptible to advancement than other sheep.*

In January, 1880, William G. Markham made some inquiries of Monsieur Bernardine, director of the Rambouillet flock at that time, and

* History of Rambouillet sheep. American Rambouillet Record.

regarding the history and tendency of the improvement Mr. Bernardine replied:

From 1840 the object was to produce Merinos of which the animals were at the same time valuable for slaughtering and for the production of wool. The fleece ceased to be the entirely predominating consideration in the choice reproducing animals. The chief end was plump and well-developed forms, and by a rich regimen animals were obtained, about 1850, having very large weight, but which were very exacting and less robust, and the fleece of which was not in relation with their weight, either as to quantity or quality of wool. The end in view, the mutton, had almost destroyed the folds, which, with the exception of a few subjects, scarcely comprised more than those of the neck, and the result was to diminish the value of the animals in the eyes of foreigners. Shortly after 1850 these errors were renounced, and efforts were made to bring the flock back to its true and ancient type by making choice more with regard to wool, and repudiating the exaggeration of development in the choice of reproducing animals and the superabundant and onerous feeding that had been practiced to attain this end. The Negretti type again acquired importance and the folds they bore were no longer excluded, but sought after rather as characters essential to animals furnishing the richest fleeces, and corresponding better with the desire of foreigners, who came to Rambouillet to seek reproducing animals. It was especially since 1867 that the improvement of the flock has realized marked progress with regard to production of wool, and a return to their primitive aptitude to live exclusively on pasture and to support intemperate conditions, and the privations resulting from dry seasons and the natural aridity of pasturage.

The average weight of unsheared rams has been as follows:

	Pounds.
In 1786	110 to 120
In 1801	114
In 1802	131
In 1847	201
In 1851	171½
In 1867	192½
In 1878	159 6/16

For ewes the average weight has been as follows:

	Pounds.
In 1786	72 to 88
In 1801	93 1/16
In 1802	96 8/16
In 1847	128 8/16
In 1851	115 3/16
In 1867	135 7/16
In 1878	115 3/16

In 1786 the height of these sheep ranged from 24 to 30 inches. In 1801 and 1802 the height, length, and girth were as here shown:

	1801.		1802.	
	Rams.	Ewes.	Rams.	Ewes.
	Inches.	*Inches.*	*Inches.*	*Inches.*
Height	28.8	26.6	28.3	25.6
Length	45.6	40.4	53.1	52.2
Girth	50.8	50.4	43.3	44.4

The following table was recorded at Rambouillet, February 12, 1801, showing weight and dimensions of two, three, and four year old rams and ewes:

	Age.	Weight.	Height.	Length.	Girth.
	Years.	*Lbs. oz.*	*Inches.*	*Inches.*	*Inches.*
Rams	4	109 1.5	28.4	44.4	49.6
Do	3	122 4.5	28.8	46.8	52.4
Do	2	111	28.8	46.0	50.8
Average of rams		114	28.8	45.6	50.8
Ewes	4	92 6.4	26.8	44.2	50.4
Do	3	97 1.5	27.2	47.2	50.8
Do	2	93 6.5	26.4	47.2	50.4
Average of ewes		93 11.25	26.8	46.4	50.4

The shearing of 1794 showed the following product:

	Lbs.	*Oz.*
13 mature rams averaged each	8	8
86 young rams averaged each	6	9
199 breeding ewes averaged each	6	9
67 ewes, 2 and 3 years old, each	6	9
85 ewe lambs averaged each	6	1

In 1796 the average weight of fleece of the entire flock was 6 pounds 9 ounces; in 1797 it was 8 pounds; in 1798 it was 7 pounds; and 8 pounds in 1799 and 1800. In 1801 the average weight of fleece was 9 pounds 1 ounce.

In 1804 the wool produced was as follows: 45 rams gave an average of 7 pounds 7 ounces; 101 ewes, 4 years old and over, 7 pounds 13 ounces; 60 ewes, from 2 to 3 years old, 7 pounds 12 ounces; 70 lambs averaged 6 pounds.

In 1813 the wool of one-third of the flock, which was weighed preparatory to sale, yielded as follows: 13 rams, 146 pounds, average 8 pounds 12 ounces; 43 ewes, 316 pounds, average 7 pounds 7 ounces; 21 ewes, from 2 to 3 years old, 148 pounds, average 7 pounds 1 ounce; 29 lambs, 204 pounds, average 7 pounds.

The general average was 7 pounds 13 ounces per fleece.

In 1817 the average weight of the fleece was higher. It was 8 pounds for one flock composed of sheep of the different classes, in the same proportion as the fleeces of 1813. In 1834, 107 rams averaged 11 pounds 12 ounces; 206 ewes averaged 7 pounds 3 ounces, and 77 lambs 6 pounds 13 ounces each. In 1838, 40 rams yielded an average of 10 pounds 4 ounces; 201 ewes and 85 lambs, an average of 7 pounds.

Shearing of June, 1847.

	No.	Ages.	Average weight after shearing.	Average weight of fleece.
			Lbs. Oz.	Lbs. Oz.
Select rams	2	1½ years	187 8	12 8
Rams	10	1½ and 2 years	190 9.6	10 12
Breeding ewes	158	3 to 7 years	120 13.8	7 9.5
Lambs	77	1½ years	101 11.2	8 1.7

Shearing of May, 1851.

Select rams	4	1½ years	160 4.8	11 1.5
Breeding ewes	194	3½ to 11½ years	108 7.4	6 12.7
Lambs	61	1½ years	94 13	8 8

Shearing of March, 1869.

Adult rams	7	2½ years and over	171 2.3	15 5.1
Ram lambs	60	1½ years	135 1.6	13 1.1
Breeding ewes	186	3½ years and over	104 9.5	8 9.7
Ewe lambs	113	1½ years	90 5.1	9 12.2

Shearing of May, 1877.

Adult rams	15	2½ years	165 12.5	16 9.3
Ram lambs	64	1½ years	136 7.2	14 14.4
Young ewes	77	2½ years	88 8.1	10 14.6
Breeding ewes	324	3½ years and over	92	9 13.1
Ewe lambs	110	1½ years	85 10.8	10 10.4
All ewes	521	1½ years and over	90 2.3	10 3.1

Some experiments made at Rambouillet on the growth of the fleece are of interest. On the recommendation of Mr. Gilbert there was made, in 1798, this experiment: A ewe, eighteen months old, had never been sheared; her fleece removed in 1799 weighed 14 pounds 10 ounces. This fleece, of which the fibers were double the ordinary length, showed no loss in respect to weight, though there are few ewes which produced in thirty months the same quality of wool. A second ewe, which was likewise sheared at the age of thirty months, in 1800, gave a much greater quantity of wool, though she had suckled a lamb. Her fleece, which weighed 21 pounds, had wool 8 inches long. The ewe of last year gave in each of the two following years 6 pounds, and the ewe sheared of the same age gave the same at one shearing in two years as the other gave in two shearings in the same length of time. In 1801 8 ewes were sheared, of which the fleeces had two years' growth and weighed from 16 to 20 pounds. It appeared after the different experiments that the wool which was left to grow for two years acquired double the length, while it preserved its fineness and lost nothing in respect to quantity. It was not observed that sheep submitted to this experiment suffered much from the heat, nor that it affected their health. It was only noticed that the lambs found more difficulty in sucking the ewes, because of the length of the wool which entirely hid the udder.

Those who opposed the introduction of the Merino asserted in the beginning that the wool would degenerate; facts disproved the assertion and then they sought to depreciate the breed by as roundly asserting that the poor foreigners were not of a nature to take on much fat, and that for mutton they were very inferior, tough, stringy, and tasteless, or if of any taste, a very offensive one. This assertion was contradicted by facts. It was admitted to be true that the mutton eaten in Spain was generally lean and tough, with a disagreeable taste, but it was shown that this was due to the fact that they were only killed and served as food when they were no longer useful for reproduction, or when they had grown old. The contractors for butchering them conducted them to commons situated in the neighborhood of towns, and so divested of grass that the sheep found difficulty to get enough to keep them alive. The Spaniards kept very few castrated sheep in their traveling flocks, at most in the proportion of two-sevenths, and those which were castrated were of an advanced age. All breeds and varieties submitted to such bad treatment would naturally give poor mutton in return. Besides, the coarse-wooled breeds in Spain had not more delicate flesh than the Merinos, and those were found who testified that they had eaten in Spain Merino mutton as savory as that of the best mutton of France.

Tessier and Huzard reported some experiments made with much care. To completely refute the prejudice existing against the meat of the Merinos, they selected several young Rambouillet wethers. They fed them only two months, in the stable, with oats and hay, and they were fat. The meat, not so dark as the native French wethers, was tender and sweeter. Another experiment followed. On the 8th of March, 1800, 3 wether lambs were set apart to be fattened. They were of the same age but of unequal weight, aggregating 243 pounds. There was more or less a difference of 13 pounds. At first they were fed on lucerne and bran, then the bran was discontinued and barley and oats substituted for it. The animals were weighed nearly every fortnight, as was the food destined for them for the same period of time. They were permitted to eat as much as they wanted. They were weighed on June 3, at the end of eighty-six days, and their total weight was 326 pounds, a gain of 83 pounds. The smallest of the 3 was killed for mutton, and weighed 99¾ pounds.

	Pounds.
Flesh and bone	51
Fleece	7¼
Tallow	5½
Liver and lungs	4
Head, feet, skin, and intestines	28½
Blood	3¼
Total	99¾

In the eighty-six days the 3 sheep consumed 498 pounds of lucerne, 76 pounds of bran, 270 pounds of barley, and 195 pounds of oats, an

average of 346 pounds for each sheep, or 4 pounds a day. It was not when they increased the most that they ate the most, but they ate the most from the fifteenth to the forty-fifth day.

The fattening of the other 2 wethers was continued sixty-five days, in which time they consumed 653 pounds of oats, barley, and lucerne. They were sheared in June and killed August 20, yielding, respectively, 57 and 55 pounds of meat and bone; 20 and 18 pounds of suet; 5 and 4 pounds of liver and lungs; 34 pounds each of head, legs, skin, and intestines, and 5 pounds each of blood; total, 121 and 116 pounds. The meat, as in the case of the first one killed, was found to be excellent.

It was observed as the result of the experiment that the wether weighing the most at the end of the test was that one which was of medium weight at the beginning; that the one weighing the least of the three at the end was the one which weighed the least at the beginning; that the greatest increase in each took place in the first twelve days; that there was an abatement of increase during a warm spell in two of the animals, after which, the weather being cooler, the increase was greater; that on two occasions one increased, while the two diminished; these were not the same, each time, which diminished.

The conclusions drawn from the experiment were that to avoid loss the fattening must not be prolonged, and that after a certain time the sheep did not increase in value proportionate to the cost of feeding.

The great improvement in this Rambouillet Merino is concisely stated by M. Bernardin, the director of the flock:

> The fold of Rambouillet can show by record and statistics that the managers have produced a type of sheep which they sought to produce from the start; that this race of sheep has been kept pure for a century, and everyone applauds at sight the incomparable perfection attained at Rambouillet; that the modes of feeding, different regimen, methods of breeding, improvement of selection, care, and good management of shepherds, has produced a sheep of early development for consumption, rapid growth to maturity, and showing a gain by average from 120 pounds for rams and 75 to 80 pounds for ewes in 1800, to 200 to 250 pounds for rams and 120 to 150 pounds for ewes in 1880; that the weight of fleece of rams has increased from 10 pounds in 1800 to 16 to 20 pounds in 1880, and ewes from 5½ pounds in 1800 to 10 pounds in 1880, with length of staple increased from 2 inches in 1800 to 3 or 3½ inches in 1880; that the fineness of fiber and crimp of the wool have reached the highest degree of perfection, and that for length, strength, and elasticity it has no equal; that a density and bulk of fleece has been attained which does not exist in any other race of sheep; that the wethers and lambs are noted for their rapid and steady growth to maturity, their aptitude to fatten, and the excellent quality of mutton, and that other Merinos are not of the same value and title as those of Rambouillet, either regarding the production or the qualities of wool and meat. This type of sheep are the only Merinos in existence that are noted for their prodigious size, rapid growth, great hardiness, and a dense fleece of great bulk, length of staple, freedom from excessive grease, and unsurpassed fineness, equally suited for the carder and comber.

Touching the progressive weights of these animals from birth to maturity there follow tables given for the years 1862, 1863, 1864, 1865, and 1866, showing weight at birth and on the first of each successive month:

Ram lambs.

	Day and year of birth of lamb.									
	Dec. 8, 1862.		Nov. 12, 1863.		Nov. 23, 1864.		Nov. 14, 1865.		Nov. 29, 1866.	
	Lbs.	oz.	Lbs.	oz.	Lbs.	oz.	Lbs.	oz.	Lbs.	oz.
Weight of ewe after parturition	123	10	121	9	115	6	120	5	113	8
Weight of lamb at birth	8	10	8	3	8	3	9	....	10	13
Weight of lamb—										
Jan. 1	18	4	29	2	24	10	28	5	24	13
Feb. 1	33	4	46	9	39	10	44	6	34	10
Mar. 1	45	10	62	...	74	3	52	7	43	13
Apr. 1	60	10	73	12	69	7	68	13	54	14
May 1	71	9	84	13	78	6	82	2	64	7
June 1	81	12	95	7	86	9	90	13	72	6
July 1	91	9	98	..	93	13	97	9	82	3
Aug. 1	99	2	108	10	104	3	103	9	90	7
Sept. 1	106	...	116	7	112	...	110	1	98	3
Oct. 1	117	9	125	3	122	3	113	7	101	7
Nov. 1	125	6	132	6	130	3	122	3	107	9
Dec. 1	134	13	139	13	139	14	131	...	113	9
Jan. 1	142	...	150	7	150	4	138	6	120	2
Feb. 1	156	...	160	...	157	9	144	...	125	8
Mar. 1	157	10	165	14	160	8	146	5	128	9
Apr. 1	160	3	172	13	168	...	149	7	135	13
May 1	161	10	174	13	173	5	159	4	137	2
June 1	161	...	168	14	161	14	151	...	138	..
July 1	166	6	169	9	156	1	148	3	124	10
Weight of sheep—										
Aug. 1	163	9	175	4	163	4	149	10	122	..
Sept. 1	155	...	174	3	165	10	152	6	123	..
Oct. 1	156	6	176	12	168	...	151	...	125	8
Nov. 1	160	4	180	12	174	...	153	...	125	8
Dec. 1	164	...	182	9	176	8	161	9	125	8
Jan. 1	165	...	185	6	187	8	168	...	125	8

Ewe lambs.

	Day and year of birth.									
	Dec. 8, 1862.		Nov. 12, 1863.		Nov. 23, 1864.		Nov. 14, 1865.		Nov. 29, 1866.	
	Lbs.	oz.	Lbs.	oz.	Lbs.	oz.	Lbs.	oz.	Lbs.	oz.
Weight of ewe after paturition	125	12	113	12	123	2	120	9	115	9
Weight of lamb at birth	8	3	7	14	8	4	9	1	9	4
Weight of lamb—										
Jan. 1	18	1	25	10	21	14	27	10	21	6
Feb. 1	32	8	38	10	34	...	42	42	31	6
Mar. 1	42	6	53	10	44	3	49	5	35	7
Apr. 1	54	3	58	1	56	10	57	10	47	5
May 1	62	...	63	8	62	4	62	2	55	9
June 1	67	3	68	3	67	2	73	8	60	8
July 1	76	3	73	14	71	8	77	2	65	8
Aug. 1	81	3	73	3	75	4	81	14	62	7
Sept. 1	88	13	82	3	77	...	83	4	77	7
Oct. 1	94	9	90	9	83	8	88	3	76	9
Nov. 1	98	6	91	11	89	4	91	12	82	4
Dec. 1	103	13	96	4	98	4	99	13	88	3
Jan. 1	108	7	102	4	101	4	104	....	94	3
Feb. 1	111	4	108	4	106	5	108	10	97	..
Mar. 1	118	7	112	3	102	...	113	8	99	14
Apr. 1	117	13	114	14	107	8	119	3	100	10
May 1	114	4	112	14	110	1	124	8	101	8
Weight of ewe—										
June 1	109	2	108	10	112	7	108	8	96	12
July 1	112	...	105	9	108	14	108	3	96	....
Aug. 1	109	10	107	2	108	4	103	2	89	14
Sept. 1	107	8	106	9	108	11	101	8	92	7
Oct. 1	104	5	108	14	108	10	102	13	96	3
Nov. 1	107	11	111	4	106	3	103	13	94	13
Dec. 1	114	10	113	12	112	...	108	8	103	....
Jan. 1	118	3	114	7	113	8	111	10	106	....

The length of wool on the ram lambs when six months old was 2.10, 2.09, 2.12, 2.14, and 2.15 inches, respectively, in 1862, 1863, 1864, 1865,

and 1866, and in the ewe lambs when six months old in the same years was 1.14, 1.14, 2.03, 2.04, and 1.14 inches, respectively.

In following the progressive improvement of this flock, after the time that the first American importation was made from it, the object has been to preserve the unity of its history and for convenience of reference in subsequent pages.

In 1839 D. C. Collins, of Hartford, Conn., was traveling in Europe, and upon a visit to the Rambouillet flock was struck with the marked superiority of the Merinos composing it. He determined to procure a small flock of breeding sheep, with a view of raising rams to restore the fine-wooled flocks of his own and neighboring States to their original character for strength of constitution and weight of fleece, together with excellence of quality. He succeeded in purchasing, in 1840, 2 rams and 20 ewes that had passed the age when they were used as breeders in the Rambouillet flock, otherwise they were choice sheep. These he brought home with him that year and established on his farm. They had large, loose skins, full of folds, especially around the neck and below it, on the shoulders, and not unfrequently over the whole body; the wool thickly covering the surface of the forehead, cheeks, and legs clear down to the hoofs, giving the fleece the appearance when shorn and spread out of having been taken from a larger animal than the sheep. The fiber of the wool was fine. The fleece opened of a brilliant creamy color within, on a skin of rich pink, and was soft, glossy, wavy, and very even over the whole body; was exceedingly close and compact and had a yolk free from gum, and easily liberated when it came to be washed. It became of the purest white when scoured by the manufacturer. The sheep were one-tenth larger than Paular Merinos and were equally thrifty.

At the head of the small flock was Grandee. At three years of age, in France, he sheared 14 pounds of wool. His fleece, which was suffered to grow from 1839 to 1841, weighed on shearing 26 1/16 pounds, unwashed wool. One year's fleece in 1842 weighed 12¾ pounds. He measured in a direct line along the body, from the setting on of the horns to the end of the rump, 3 feet 8½ inches; height over the rump and shoulders, 2 feet 5 inches. His weight when in fair condition was about 150 pounds. The ewes were proportionately large, and were great milkers and the best of nurses.

In September, 1842, the flock consisted of 37 ewes and 13 rams, including lambs. They were then of unusual size for Merinos, but their chief excellence was in their immense fleece of fine wool. The average fleece of each ewe in 1842 was 6 pounds 9 ounces, or allowing one-quarter for loss in clean washing 4 15/16 pounds. The Saxony sheep at that time did not exceed 2¼ pounds, and the Spanish Merino 3½ to 4 pounds.

This flock did not long remain in Connecticut. It was sold to L. G. Bingham, of Williston, Vt. Four of the imported ewes were living in 1846, and no full-blooded ewe had at that time ever been sold from the

flock. Some of the rams had been sold to various sections of the country, some in Connecticut.

When the Rambouillet flock was brought into France, favored parties had presented to them, or were permitted to buy, some of the sheep. One of these was a M. de Chauevier, who placed a few on his farm at Croissy, 12 miles from Paris. Of this flock Victor Gilbert purchased 1 ram and 8 ewes in 1800, and bought yearly from 2 to 4 until 1811, when he bought 5 rams and 50 ewes, and in 1818 about 50 ewes. In 1821 he bought a Rambouillet ram, and up to 1827 5 more of them. In May, 1846, John A. Taintor bought 2 rams and 7 ewes of the Gilbert flock and brought them to Connecticut, and he made yearly purchases from this and other flocks at subsequent times.

The French Merino did not become popular in Connecticut, was but little extended and soon discarded. The best of these importations found purchases from Vermont and Western New York, thence to Ohio and States further west. The Taintor importation was purchased by A. L. Bingham, Cornwall, Vt., who, in 1850, had the entire Taintor flock, and in fact all the ewes of the French blood in the United States, except 27 which were owned by other individuals over the country. He had made three crosses with the French rams on his old flock of Spanish Merinos with great satisfaction, the progeny giving an increase of fleece.

Eighty-three French sheep weighed 10,458 pounds, an average of 126 pounds; 83 French sheep fleeces weighed 1,494 pounds, an average of 18 pounds, or $2\frac{3}{4}$ ounces for every pound of flesh. The smallest fleece from a 10-months lamb weighed $13\frac{1}{2}$ pounds. The heaviest fleece from a 3-year old ewe weighed $25\frac{1}{2}$ pounds, unwashed, or $14\frac{1}{2}$ pounds washed wool. In comparison:

One hundred Spanish-American Merinos weighed 9,000 pounds, an average of 90 pounds.

One hundred Spanish-American Merinos fleeces weighed 650 pounds, an average of $6\frac{1}{2}$ pounds or $1\frac{1}{16}$ ounces for every pound of flesh, or a difference in favor of the French Merino of over 1 ounce.

Notwithstanding many very favorable showings Taintor's importation did not enthuse the American sheep-breeder and wool-grower; it is now generally conceded that they were not given a fair trial. Some contend that they were evidently overgrown specimens, and not a fair sample of the French Merino in the Rambouillet flock. As usual with overgrown specimens these were flat, slab-sided. They were unsightly, and the progeny was tender, hard to keep fat, and required twice the care of good, stocky, hardy animals. It was also charged that they were mongrel sheep, a cross between the Merino and some coarse long-wooled sheep.

There came about at nearly this date a change in sheep husbandry. Wool-growing was made secondary to mutton-raising and the sheep on the hills and in the valley were used to feed the operatives in the neigh-

boring mill and not the spindles that they tended. The wool sheep gave way to the mutton sheep, many of the English breeds being introduced and crossed on the common sheep of the country and on the Spanish and Saxon grades, and so, by 1850, the raising of fine wool was generally abandoned; the finer grades of sheep had gone out of nearly every county, and the Cotswold, Southdown, and Leicester had taken their place, the former and latter yielding a wool for the coarser grades of cloth, the Southdown a finer wool, and all of them making good mutton.

From 1840 to the present day sheep have declined in numbers, and the dogs are charged with being the cause. In years gone by, when there was much uninclosed land, in many towns there were large flocks belonging to many owners, tended by a shepherd; but as lands became inclosed town flocks have disappeared, and small flocks, unwatched and untended, have become a prey to dogs. In 1890 6 per cent of the entire number in the State became a prey to the worthless dogs. Nor could this be wondered at, when more premiums were paid by the agricultural societies for dogs than for sheep.

The common sheep, as known in 1820, have disappeared, leaving scarcely a trace, and the Merinos and their grades have diminished to a small fraction in the sheep husbandry of the State. There is a mixture of all breeds of English sheep. In 1880 but 50 per cent were of improved English blood, in 1891 80 per cent, the Southdowns and Shropshires leading. But there were Cotswolds, Hampshire Downs, Oxford Downs, and Dorsets. The Dorsets have been lately introduced and have gained immediate popularity by their prolific qualities.

Sheep and wool of Connecticut, 1840 to 1890.

Year.	No. of sheep.	Wool.	Average weight of wool per head.
		Pounds.	*Pounds.*
1840	403,462	889,870	2.25
1850	174,181	497,454	2.85
1860	119,897	335,985	2.81
1870	83,884	254,129	3.03
1880	59,431	230,133	3.87
1890	46,750	218,831	4.68

Connecticut raises but a small percentage of the mutton that her people consume. In the city of New Haven, where, in a certain period of time, 12,000 sheep were disposed of by butchers, less than 250 were Connecticut grown. It is so in all the principal cities of the State. Those from Canada are preferred by the consumer. Raising early lambs is the most profitable industry. Western and Canada ewes are purchased in the late summer, crossed by a Down ram and the lambs sold when from 12 to 14 weeks old at $5 to $8, the mother ewes following soon after. There has been no increase in the number of sheep since

1890, but there has been an appreciation in value owing to choice breeding and the introduction of many full-blooded English sheep.

The most recent accession to the sheep husbandry of the State is the Dorset Horn sheep. These are the best of the old upland horned sheep of England, and for a long time have bred unmixed in the county of Dorset and in the adjacent country. It is somewhat larger than the Southdown and longer on the legs, which are white, as is the face. The wool is moderately fine, somewhat longer than the Southdown, and is applied in England to the making of inferior cloths. The shoulders are low and the loins broad and deep, the back straight, the lips and nostrils black, though with a frequent tendency to assume a pinkish, fleshy color. They have always been a strong, hardy sheep, good travelers, active and docile, suited to the practice of folding and capable of subsisting on scanty pastures.

That character, however, which has commended these sheep to the English breeder is the fecundity of the females and their readiness to receive the male at an early season, and their excellence as nurses. They frequently have twins and rear a greater number of lambs than any other sheep. They have been known, like the sheep of some warmer countries, to produce twice in the year; this, however, is rare, but it is common for the ewes, especially when well fed, to take the ram and become impregnated while they are nursing their young. They will receive the ram as early as the months of April or May, the usual time being the early part of June, so that the lambs shall be born in October and be ready for use by Christmas, at which time they are considered a great luxury, and command a high price. This has given rise to the practice of rearing the lambs in houses until they are ready for market. This method has long been regularly and systematically pursued on a large scale, especially within reach of London, where a great demand exists for this kind of luxury.

The original horned Dorset breed is practically extinct and the improved Dorset has taken its place. The great improvement made in the Dorsets since 1830 has increased the demand for them. They possess good quality, fatten readily, and incur but little risk in lambing, while the lambs mature early. Within a few years past they have doubled in size, their fleeces are twice as heavy, and their fattening propensity has been increased to the extent that the best Dorset lambs now arrive at maturity quite as early as the Downs. Losses in lambing and barrenness are so rare that from 150 to 160 lambs may usually be calculated on for every 100 ewes placed with rams, and their fecundity is so great that the possibility of getting from these sheep two crops of lambs in one year does not exist merely as rare and exceptional, but has often been effected. Statistics show that out of 3,547 ewes only 60 were lost, and they reared 4,425 lambs, or 125 per cent of lambs, with a loss of only 1.6 per cent of ewes. With moderate feeding a wether of this breed comes out fat at from thirteen to fourteen months old, with

carcass weight from 70 to 80 pounds each. The lambs are generally fit for the butcher from ten to twelve weeks old, when they average from 12 to 14 pounds per quarter. The rams clip from 10 to 12 pounds of wool, the ewes from 5 to 6 pounds, and the lambs, which are usually shorn, yield about half as much as the ewes. The wool of the lambs is in great demand.

The Dorset Horns were first known in the United States in the fall of 1885, when Messrs. E. and A. Stanford, of England, exhibited a small flock at the Chicago fat-stock show. The first owned in the United States were purchased by William Daley, of Lockport, N. Y., of Valancey E. Fuller, of Canada, in March, 1887, and the first direct importation from England was of 12 head by Adin Thayer, of New York, in June, 1887. The importations of 1887 did not exceed 200 head. The first importation into Connecticut was June 1, 1891, by George E. Jones, of Litchfield, the importation being 108 head in number, from the flocks of William Mayo, and again, September 5, 1891, of 85 head from the flocks of W. H. Groves, W. S. Hull, and John Jarrett. These sheep are described as straight and deep in body, ribs well arched, loins broad, and neck well set on, full in the shoulders, without coarseness, the hind limbs well let down toward the shank, forming a good leg of mutton. The general features are pleasing, head well up, horns thin with a symmetrical curl, eye bright and lively; the face rather long and thin, lip and nose pink or flesh colored, the bone small, giving all the appearance of a useful and hardy breed of sheep; color pure white. The rams weigh from 200 to 300 pounds; ewes, from 150 to 200 pounds. Mr. Jones' ewes gave 190 per cent of lambs.

RHODE ISLAND.

From the importation of Capt. Paul Cuffe and Isaac Cory into Newport, early in September, 1810, of 74 Merino rams and ewes, shipped by William Jarvis, at Lisbon, came the foundation of the flocks of David Buffum and William I. Bailey, and of their neighbor, George Irish. These Newport farmers had adjoining farms, and on that of the first the cargo of sheep was disposed of September 21, 1810. These flocks were kept up many years, were noted for their great excellence, and were freely drawn upon by many of the noted breeders of Connecticut and Vermont, among whom may be mentioned Edwin Hammond, A. L. Bingham, R. T. Robinson, and Mr. Bundy. About 1835 Joseph I. Bailey, who had succeeded to the flock of William I. Bailey, sold out to parties in Vermont, who took the sheep, about 150 in number, to Whiting, where a portion of them, passing through two other hands, fell into possession of German and David Cutting, and infused into Vermont Merinos what is known as the Cutting or Rhode Island blood. Among others who had full-blooded Merino sheep as early as 1812 may be mentioned George P. Hazard and Joseph Congdon. The Rhode Island Merinos bore such a good reputation and were so eagerly sought

AFTER CURTIS. HORNED DORSET.

for by breeders out of the State that by 1850 they had practically disappeared, both from the exhibits at the State fairs and from the farms, and the early breeders turned their attention to Southdowns, Leicesters, and Cotswolds. It was found also that wool-growing would not pay unless connected with raising mutton and lambs for the market. Previous to 1870 sheep husbandry for mutton, lambs, and coarse wool was pursued with great advantage. Almost every farmer kept his flock, large or small, according to his facilities for maintaining them, which fully repaid him for expenditure and care. But from 1840 to 1890 the flocks have greatly diminished. In 1840 there were 90,146 sheep in the State. Many of these were Merinos and their grades, which now began to disappear, and in 1850, or a period of ten years, the number of sheep had fallen one-half, to 44,296, and to 32,624 in 1860. The facilities for keeping sheep were not less than in former days, and the value of the fleece as well as the flesh had not diminished. But there was some competition, sheep and lambs being brought from Kentucky. But the principal reason assigned for the decrease from 1840 to 1860 was the increase in the number of dogs, there being in 1860 one dog to every five sheep.

The breaking out of the civil war and the demand for wool and woolen clothing stimulated sheep husbandry, and from 32,624 in 1860 the number of sheep rose to 40,717 in 1865, yielding 114,781 pounds of wool. Some fine wool was raised and a few Spanish Merinos were introduced into the State, but in number inappreciable, and at the present day none exist. The rapid decline in the sheep and wool of the State is shown in the following census returns:

Year.	No. of sheep.	Wool.	Average weight of wool per head.
		Pounds.	*Pounds.*
1840	90,146	183,830	2.04
1850	44,296	120,602	2.72
1860	32,624	90,699	2.76
1870	23,936	77,328	3.23
1880	17,211	65,680	3.81
1890	20,231	79,610	3.94

VERMONT.

It is not positively known when the first Merino sheep were introduced into Vermont, but some were taken there from the Humphreys importation, a few of his full-blood stock appearing in Bennington County, the property of Mr. Stoddard, of Rupert, previous to the Jarvis importations of 1810. Mr. Stoddard raised full-blood and half-blood sheep which he sold or let, and which laid the foundation of some flocks in western Vermont and in Washington County, New York. The first Merino blood taken into Washington County, New York, was when Aaron Cleveland, of Salem, in that county, obtained a half-blood

ram from the Stoddard flock, and the quarter-blood rams which he reared from this ram and native ewes were the first sheep containing any Merino blood produced in the county. Mr. Stoddard hired half-blood rams to Mr. Cleveland and others for several years at $10 per annum, or sold them for $50, and hired the first full-blooded Merino ram that went into Washington County to N. Wilson, of Salem, in 1809. The price was $50 for the season.

As early as 1808 or 1809, Humphreys had some full-blood Merino rams at Hartland, Vt., and as the person who had them in charge did not use them to his satisfaction, Humphreys sought for some person who would take them, use them well, and have their use for nothing. There appears to have been two of these rams, the largest one valued at $1,000 and the smaller one at $950, and for reasons not now known they were called the Niles rams. These rams were placed in the care of Mark Richards and his nephew, Luther Richards, of Westminster. The Richards bred their common ewes to these rams, and there was such a marked improvement in the quality of the fleece that they concluded to purchase some full-blood ewes, and attended the auction sales of Capt. Nathan Dorrs, of Roxbury, Mass., and purchased several, probably of the early Jarvis importations. The Richards at first used Humphreys rams (and perhaps some ewes), and then purchased both rams and ewes of William Jarvis. They continued to breed the Merino sheep for several years. Eldad Harlow, of Westminster, informed Mr. Chapman that when a boy he saw these Richards sheep and that they "looked black as muddy hogs." The Harlows purchased some of these sheep of Mr. Richards, and bred them for a long term of years, but the Richards flock, of a thousand or more, were ruined by the introduction of Saxony blood, like so many more of the fine flocks of Merino sheep of that day.

July 25, 1810, Elias Gallup, of Woodstock, advertised in the Washingtonian of that town rams from the Humphreys flock, not full-bloods, but two-eighths to six-eighths, and from the number of towns where they were to be seen it would appear that they were being liberally offered; also that they were quite widely disseminated. The notice reads:

> Such sheep can be had by applying to the subscriber on Woodstock Green; Samuel Dumer, of this town; Judge Keys, of Stockbridge; Elisha Hotchkiss, of Chelsea; Oliver Lathrop, of Sharon; Freeman Leavitt, of Hartford; Dr. Phineas Parkhurst, of Lebanon, N. H., and Samuel Montague, of Bridgewater, where samples of wool and cloth made from the said wool can be seen. * * * All who possess higher blooded than the above can show it by certificates from the subscriber, or Col. Humphreys, who has an accurate account of the whole of said sheep in this part of the country.

The same paper, October 6, 1810, contained an advertisement of Capt. Pettis that "the famous full-blooded Niles ram will be kept for use this season on such terms as shall be agreed upon."

Col. Humphreys had in view, principally, a large supply of wool for manufacturing purposes, hence his pushing into Vermont and New

Hampshire not full-bloods only, but those of less purity. These widely disseminated would more rapidly and more extensively bring on such an improvement on the common sheep of the country as would suffice to keep the woolen mills moving, and supply the increasing demand for American goods.

In April, 1811, the sheep that William Jarvis had reserved from his different importations and gathered at Claremont, N. H., during the previous fall and winter, were moved across the Connecticut River and settled upon the farm he had purchased a short time previous as his future home, and from whence so many of the flocks of eastern Vermont and many of those in the western part of the State derived the blood for their foundations, and procured other additions in after years, to recuperate and improve the quality of the first, or to improve that derived from other sources. Mr. Jarvis had instructed the Paular shepherds, who came with that flock to Lisbon, to select 300 sheep, which he shipped to Newburyport. The half of these were Paulars, a fourth Aguirres, an eighth Escurials, and the other eighth Negrettis and Montarcos. About another hundred were driven up from Boston, remnants of some of the shipments to that place remaining unsold. In all the flock numbered about 400. In compliance with the invariable practice in Spain, Mr. Jarvis bred the respective flocks separately, or what is called in farmer's language in-and-in, that custom of breeding the bucks and ewes of the same cabaña or flock together, or in-and-in, having existed in Spain from time immemorial, but about 1816 or 1817 he mixed the different flocks together, and so bred his Merinos afterwards.

A communication to the National Live Stock Journal, April, 1873, signed "A Wool Grower," says that the writer well knew the five families imported by Mr. Jarvis, having seen them on his farm at Weathersfield. The Escurials, Montarcos, and Aguirres were a smooth sheep, with but very little fur or hair, as he termed it. The Paulars were a strong, hardy sheep, round-bodied, with fur on the ham, and also on the wrinkles about their neck. The Negrettis were a low sheep, with flabs under the belly and flanks, not as fine on the shoulder as either of the others and yet not so uneven as the Paulars. The Negrettis cleaned more wool than any of the others, which was not so crusty and was of longer staple. They were also better milkers, and as there was little difference between his Paular ewes and those of "Wool Grower," the latter selected a stock ram from the Negrettis. At that time Mr. Jarvis had his sheep in separate flocks, though he had crossed some of the families together, and finally with the Saxon, to improve his wool. The first cross he thought an improvement, but as late as 1833 he said he had missed it, and that the Paular was the best sheep that ever stood on hoof. In 1822 Mr. Jarvis gave a certificate that his pure Merinos had been bred so as to contain one-half Paular blood, one-quarter Muros or Aguirres, three-sixteenths Escurial, and one-sixteenth Negretti bred together.

Mr. Jarvis made his cross with the Saxon Merino in 1826. On May 4, of that year, George and Thomas Searle, of Boston, sold at Brighton 321 Saxony sheep and 58 lambs. Of these Mr. Jarvis purchased over 50, at prices ranging from $32.50 to $137.50 each. He crossed the Saxon rams with the larger portion of his Spanish flock. Fortunately a hundred of the best Merino ewes were selected and bred to Spanish Merino rams only, thus preserving the best portion of his flock pure and unmixed with the Saxon. Later, about 1831 or 1832, Mr. Jarvis, finding the Saxon much less profitable and hardy than the Spanish Merino, selected out the Merino ewes that were left of those which had been crossed with the Saxon and again bred them to Merino rams, thereafter breeding only to Merino rams and their crosses.

About the time he began his crossing with the Saxon (1826), Mr. Jarvis found in an old trunk about twenty samples of wool which had been sent him from Spain in 1810, and which had been carefully secured in paper and labeled. He went into his yard and clipped off about a dozen samples and compared the two, and was satisfied his flock had improved upon the original stock, and good judges pronounced his to be the best wool. His sheep then averaged 3 pounds 14 ounces of wool well washed on the sheep's back.

It is generally admitted that Mr. Jarvis improved the quality of the fleece from the original Spanish type, but evidence is wanting to prove that he made any material improvement in any other direction. Henry S. Randall believed that Mr. Jarvis was too willing to please the manufacturers, and bred out to too great extent the folds and oil from his flocks.

> It is possible [says Albert Chapman] that he may have increased the size of his sheep, and thus preserved on his pure Merinos the average weight of their fleeces, but if he increased their size he could not have preserved the relative per centum of wool to their live weight, for he only claimed in 1835 that the full-blood Merino part of the flock did not materially vary from the original weight. If he improved the form he hardly kept pace with Atwood, Cock, and Rich, as the selections from his flock from 1835 to 1844 were not equal to those from the other flocks.

The practice of putting a ram "with 25 to 35 ewes," instead of coupling each with a view to individual improvement or to remedy individual defects, as has been practiced by the best breeders in later years, would probably account for the failure to reach the maximum of possible improvement. But if Consul Jarvis fell short of the highest success as a practical breeder and improver of Merino sheep attained by some other breeders of his and later times, none excelled him as a noble, public-spirited man, one entirely above the petty claptrap that belittles the character of any breeder that practices it. His noble treatment of other importers in his later writings, some of whom had endeavored to defame the stock he imported, shows him to have been of too noble a nature to have remembered aught of hatred and malice, and although the greatest public service he performed for the United States was in importing such vast numbers of sheep from the best cabañas in Spain, it was not the

HAINES, DEL.

"CONSUL."

BRED BY WM. JARVIS, WEATHERFIELD, VT.—AN IMPROVED SPANISH MERINO OF FORTY YEARS AGO.

FROM "REGISTER OF THE VERMONT MERINO SHEEP BREEDERS' ASSOCIATION," VOL. I, 1879.

only evidence he gave of a noble public spirit. It remains only to say that the flock of sheep he bred was soon scattered after his death.* Mr. Jarvis died October 1, 1859, and the flock was dispersed after the death of his son, Maj. Charles Jarvis, December 1, 1863.

There is no pedigree of any rams nor any line of ancestry given previous to 1835. The pedigree history of the Jarvis sheep begins with a Jarvis ram known as Consul, bred by Jarvis about 1838, and sold by him to Ward M. Lincoln, Brandon, Vt., and purchased of him by W. R. Sanford, Orwell, Vt., who sold him at the New York State Fair at Poughkeepsie, 1844, after breeding from him for many years. His live weight was about 160 pounds. Another ram known as Stickney's Consul was bred by Mr. Jarvis in 1835 and sold to Tyler Stickney, Shoreham, Vt., when a teg, soon after he was weaned. He was used for a number of years by Mr. Stickney and his neighbors, then sold in 1843 to G. A. Austin and John Looker, Orwell, Vt., and by them to J. Thurman Rich, Richville, Vt. This ram weighed at maturity about 130 to 140 pounds, and his heaviest fleece was 9 pounds 2 ounces washed wool. He was a dark-coated, fine, long, thick-wooled sheep. He was the sire of Hero and Fortune, celebrated sheep in their day. Another ram, Jarvis, was sold to W. R. Sanford, and then, when 9 years old, was sold to Merrill Bingham, Cornwall, upon whose farm he died, after having been used as a stock ram by Mr. Bingham for two years.

As originally formed and for a long time maintained, the Jarvis flock was essentially Paular, that family considerably predominating in numbers, but Mr. Jarvis was induced by his friend, Col. Shephard, to breed in the contrary direction from the type of the darker colored and yolkier families. The appearance of his sheep, as Dr. Henry S. Randall saw them about 1840, indicated that he had obliged his friend, Col. Shephard, and accommodated the manufacturers by chiefly using rams of his Escurial family, or which bore a large proportion of that blood. They were lighter colored than the original Spanish sheep of other families, and their wool was finer. It was entirely free from hardened yolk or "gum," internally or externally, and opened on a rosy skin with a style and brilliancy which resembled the Saxon. It was longish, for those times, on the back and sides, but shorter on the belly, and did not cover the head and legs anything like as well as those parts are covered in the improved sheep of a later day. It was of fair medium thickness on the best animals. The form was perhaps rather more compact than that of the original Spanish sheep, but altogether it bore a close resemblance to them. Dr. Randall thinks that prior to 1840 Mr. Jarvis had begun to breed back toward the other strains of blood in his flock. At about that period small and choice lots of breeding ewes were occasionally obtained from him which yielded from 4 pounds to 4½ pounds of washed wool per head. These

*Register of the Vermont Merino Sheep Breeders' Association, Vol. I.

sheep long enjoyed great celebrity and are now represented in the pedigrees of many excellent pure-bred flocks; but as a distinct family they have mostly been merged in the Humphreys-Atwood Merino and the Rich-Paulars.

Probably no State is better adapted to the production of grass and the raising of fine stock, or can exhibit finer horses, cattle, and sheep than Vermont, and of all its counties Addison ranks first in grass and live stock. For years prior to 1810, and some years later wheat was its staple. But wheat sometimes failed and thought was turned in another direction.

Several individuals, awakened to the wants and capabilities of the county by privations and embarrassments experienced during the interruption of our commerce with foreign countries before and during the war with Great Britain, did, at great expense, and incurring the penalty of all innovators, being laughed at by their neighbors, introduce into the county Merino sheep. Among the foremost in this beneficent work were Refine Weeks, Daniel Chipman, George Cleveland, and Horatio Seymour.*

We have no records of the flocks introduced by these four named gentlemen, but are further told by the historian that by failure of wheat, the principal crop, by rust and the insects, the tendency towards Merino sheep was strengthened, and so rapidly were they introduced and the flocks changed that as early as 1824 in many towns a considerable flock of common sheep could not be found. After this, and following the passage of the tariff act of 1828, a majority of the farmers eagerly engaged in increasing their flocks of sheep. The result was that Addison County had, in 1840, in proportion either to territory or population, a greater number of sheep and produced more wool than any other county in the United States. The census returns of 1840 show nine States which had more than one sheep to each inhabitant, to-wit: Pennsylvania, Virginia, Maine, Kentucky, Connecticut, and Ohio, with a portion more than one, New York and New Hampshire about 2¼, and Vermont 5⅔ to each inhabitant. To the square mile New Hampshire had 65, New York 112, and Vermont 185. Addison County had 11 sheep to each inhabitant, and 373 to the square mile.

Mr. Chapman sees reason to believe that some of the sheep early introduced into Addison County were procured from Mr. Jarvis by Richard Crowningshield and imported into New York. These were driven from New York and kept in a pasture near Weybridge for a few months, and finally sold to Horatio Seymour, who bred them for a number of years and distributed them somewhat widely among the farmers of the vicinity. It was the impression these Seymour sheep produced upon the mind of the late Edwin Hammond, when a boy, that caused him to look for the Atwood sheep, which he said were the first he had ever found that looked like Seymour sheep—the peculiarities spoken of that gave them the resemblance, being mainly in the appearance of the ends of the wool or surface of the fleece.

*Swift's History of Addison County.

Early in 1811 T. W. Perkins, of Boston, purchased of Mr. Jarvis a Negretti ram and 15 Aguirres ewes. These he sent to Amos W. Barnum, of Vergennes, by whom they were bred for a number of years, and were scattered through the adjacent towns and counties.

In the fall of 1811, probably in September, Thomas R. Robinson and his nephew, Jonas Minturn, of New York, purchased from off shipboard, direct from Spain, 3 Merino ewes and 1 ram. The latter and one of the ewes were Paulars; the other ewes were one Escurial and one Aguirres. The Paular ewe was the largest of the three, and the wool finer and somewhat shorter than that of the other two. The average weight of the fleece of the three ewes, washed on the back, was 5 to 7 pounds. These sheep and their progeny, together with the various crosses with Mr. Robinson's old flock of natives, were kept long enough to greatly improve Mr. Robinson's own flock and those of the surrounding region until the introduction of the Saxony sheep, when, like most other keepers of large flocks, he took the same course and put an end to hopes of success in the line of wool-raising. Many years afterwards Mr. Robinson revived his flock by introducing pure Merino ewes from Rhode Island, from the flocks of David Buffum and W. I. Bailey.

In other parts of the State there were purchasers of Merino sheep. Linus Austin, of Wilmington, had five rams and four ewes imported from Spain in April, 1810, and brought into the State in May. In August they were offered for sale or to let. September 27, 1814, Isaac Bishop, of Granville, had for sale 20 full-blood Merino rams and 50 half-bloods, and the same year Chief Justice Skinner brought from Watertown, Conn., a number of sheep said to have been of the Humphreys importation. Their descendents passed into the hands of J. S. Pettibone, of Manchester. Mr. Pettibone, in 1822, added to this flock 20 full-blooded Merino ewes bred from the flock of Jacob N. Blakeslee, of Connecticut, and the produce of the combined flocks laid the foundation of the large and superior flock that Mr. Pettibone bred from many years.

In 1816 Zebulon Frost and Hallet Thorn purchased of Effingham Lawrence and Andrew Cock, of Flushing, Long Island, a flock of Merino sheep, and took them to Shoreham. It is not known how many were in the purchase, nor is it known of what blood they were. Some of them were kept pure, and the blood transmitted without other than Merino blood being crossed with it. About the same time some full-blooded Merinos were taken to Bridport, which were of good stock and made their impress upon the flocks of the neighborhood.

Previous to 1823 the Livingston Merino was introduced into Vermont, for on June 2, 1823, Aaron Sherwood, of Bennington, sheared from one of these 18 pounds 14 ounces washed wool of good quality, and staple 16 inches long. This sheep was described as a full-blooded Livingston Merino buck, four years old, and had never been sheared, and with fleece on weighed 178 pounds.

About 1823 Alfred Hull, of Wallingford, Vt., purchased a small flock of William Jarvis, and in 1842 had about 500, which he claimed to be pure Paulars, at least as pure as any in Vermont, and had been selling them for some years at $8 to $10 per head. He bred the ram Don Pedro, which he sold to William Lane, of Cornwall, who in turn sold him to S. W. Jewett, of Weybridge, Vt. This ram was a large, finely formed sheep, would weigh 140 to 150 pounds, and had a vigorous constitution. He sheared about 13 pounds (imperfectly) brook-washed wool, as his heaviest fleece. In 1841 and 1842, 90 ewes of this flock averaged 5¼ pounds of wool; 1 ram thirteen months old, 9 1/16 pounds; 1 three-year-old ram, 12 1/16, and several ewes cut 6½ to 6¾ pounds. In 1849 Mr. Hull bought of Mr. Atwood 1 ram and 13 ewes.

An earlier Jarvis flock was that founded by William Pomeroy, of Rutland. In 1811 Mr. Pomeroy bought of Mr. Jarvis, from on shipboard in Boston harbor, some Spanish Merino ewes of the Negretti family. In 1814 a Mr. Eastman bought of Mr. Pomeroy his ewe lambs, which he continued to breed in-and-in with a Negretti ram, except the cross of 1 ram, which he hired of Mr. Jarvis, until 1829, when they were given into the hands of his two sons, by whom some Montarcos were purchased of J. Allen, of Massachusetts. From that time the two families, Negrettis and Montarcos, were bred together. A part of this flock was taken to Wisconsin in 1863 or 1864.

In 1824 N. H. Bottom, of Shaftsbury, purchased 23 full-blooded Merino sheep in Connecticut, from whom is not known, and in 1827 Frederick Button, of Clarendon, purchased 63 ewes of Erastus Lyman, and 72 of David Wadhams, both of Goshen, Conn. They were represented as having descended direct from the flock of Col. Humphreys. At the same time 8 Humphreys rams were purchased of Mr. Wadhams, and shortly after a ram was purchased of William Jarvis warranted full-blooded and descended from the best flocks of Spain. In September, 1830, 72 more ewes were purchased of Humphreys blood. Mr. Chapman says that the purchase made by Mr. Button were Atwood sheep, and at the same time, in 1827, David P. Holden, of Wallingford, also purchased some sheep of Mr. Atwood, and that these were the first Atwood sheep taken into Vermont.

In 1830 John Rockwell, of West Cornwall, Vt., began a flock by the purchase of a few ewes of Leonard Beedle that were descendants of the flock established by Andrew Cock on Long Island. These sheep afterwards came into the possession of his son, S. S. Rockwell, who bred the flock until 1873, when H. E. Sanford became part owner. Mr. Rockwell used rams from the flocks of R. P. Hall, Edwin Hammond, V. Wright and others, up to 1868, since which time rams bred within the flock have been used. In 1860 15 Atwood ewes, bred from the Atwood and Hammond flocks, were added, and in 1874 5 Atwood ewes, and in 1876 4 Atwood and Robinson ewes were added. It is now the property of H. E. Sanford, West Cornwall, Vt., and consisted in 1887 of 86 rams and 98 ewes.

In the same year (1830) William R. Sanford, who previous to this time had succeeded to his father's flock of sheep, purchased of Grant & Jennison, of Walpole, N. H., 20 ewes that were bred by William Jarvis of his pure Spanish Merino importation, which Mr. Sanford bred to Cock and Jarvis rams. In 1845 he bought a ram lamb of Edwin Hammond, and always after that year used pure Atwood rams. In 1846 or 1847 he bought of Stephen Atwood 3 lamb rams and a few ewes from J. R. Nettleton's flock in Connecticut, bred from the flock of Jacob N. Blakeslee. In 1849 he purchased 13 ewes and the ram Old Black of Stephen Atwood and his son George Atwood, thus laying the foundation for the flock that subsequently became pure Atwood. A few more ewes, 8 or 10 in number, were bought of the Atwoods at other times, and in 1854 he purchased of W. R. Remele, of Middlebury, Vt., 36 ewes, being all of his ewe lambs of 1853 and 1854. These were pure Atwood blood. During the same year Mr. Sanford in company with W. S. and Edwin Hammond purchased 27 ewes of the Cutting flock hereafter to be noticed. A portion of these ewes were Atwood, but the larger portion were a part Atwood and a part Rhode Island blood. Again in the same year Mr. Sanford purchased 7 yearling ewes and ewe lambs that were bred by Mr. Abel P. Wooster, of West Cornwall, Vt. They were Atwood and Hammond sheep. After the introduction of the Atwood sheep into the flock the ewes from this blood were retained in the flock, and those having the Jarvis blood were sold off, as also some French and Silesian sheep purchased in 1851. The Cutting blood, or that part of the Cutting purchase that were not pure Atwoods, were also sold off, and the flock became pure Atwood and were so bred until 1874, when it was sold to L. J. Orcutt, of Cummington, Mass., and put in charge of George Hammond of Middlebury, Vt. Its subsequent history will be traced in the Hammond flock.

Mr. Sanford owned in company with Mr. Edwin Hammond 4 or 5 stock rams, and he had a half interest in the ram California, formerly used by Victor Wright. California was bred by Victor Wright in 1858, sire Long Wool, and was an Atwood sheep. He was finally sold to Messrs. Hoyt, in California, in 1861. Many other rams of great excellence were produced from this flock, among which Comet held a prominent position, and probably made the greatest improvement. Comet was bred in 1861, his sire being Wright's California. He weighed in full fleece about 140 pounds and was a symmetrical and well-made, round-carcassed sheep, and stood upon straight legs of medium length. His fleece was dense, even, and covered him well. Length of staple 2½ inches; length of fiber, 3½ inches; oil slightly buff; weight of fleece, 24¾ pounds at his third shearing. He was well folded at under side of neck, also at tail and flank. He was used extensively as a stock ram, and was an excellent sire of both ewes and rams. It is said that the income of this ram at 3 years old was $3,000. He was sold in his old age to J. S. Close, St. Clairsville, Ohio. Two rams, Eureka and Kil-

patrick, sired by Comet and bred by Mr. Sanford, deserve notice. Eureka was bred in 1861, his dam an Atwood ewe. He weighed 150 pounds in full fleece, and was even and well proportioned. He was straight-backed, moderately round in the rib, and deep in carcass; his head was broad and well-shaped and carried well up; nose short, broad and well-wrinkled and soft and velvety to the touch; his fleece was dense, extra style and quality, highly crimped and well carried at all points; staple 2½ inches long; fiber 3⅛ inches long; oil white and coated him well on the outside; weight of fleece 25 pounds. He was fashionably folded for his day, carrying a good neck, tail and flank, with some hip and thigh folds also. He obtained great celebrity as a stock ram, improving the flock of his owner, and was extensively patronized by many breeders in his neighborhood, earning for his owner $8,600. Mr. Sanford sold him as a lamb to W. O. Bascom, by whom he was sold when a yearling to S. S. Rockwell, West Cornwall, Vt., whose property he died at 7 years of age. Kilpatrick, it is believed, was the first Atwood ram that sheared a fleece of one year's growth that weighed over 30 pounds. He was bred in 1864. He weighed in full fleece 160 pounds, which at that day was considered very heavy. He was heavy-boned, with great length of carcass and was well folded at neck, tail, across the thigh and flank, and somewhat wrinkled back of the shoulder. His fleece was of fair density, scarcely medium in quality, and fairly crimped. Staple 2 inches long. The weight of his fleece was at the highest 31 pounds. The oil was buff in color and abundant. He had great stamina and constitutional vigor. His horns were immensely strong and well-nigh covered the top of his skull. He was sold to Jed Hyde, of Sudbury, Vt., and by him to L. P. Clark, of Addison, in the same State, at whose place he died in 1874. Mr. Sanford's flock usually numbered from 150 to 200, and were all descendants of the Humphreys and Atwood sheep. They had few equals in size of carcass, density and weight of fleece.

The most noted successor of Stephen Atwood as a breeder of the Atwood sheep was Edwin Hammond, of Middlebury, Vt. In January, 1844, W. S. and E. Hammond, of Middlebury, and R. P. Hall, of Cornwall, purchased from Mr. Atwood and his neighbors (these latter were certified by the sellers as being full-blooded from Mr. Atwood's flock and by Mr. Atwood as being pure Humphreys) over 100 ewes and rams. They also bought of Mr. Joseph I. Bailey 6 ewes, which were bred one year and the original stock and the increase then disposed of. In one instance in purchasing of Mr. Atwood the entire lot of ewe lambs of one year was taken; in another one-third of the old ewes, Mr. Atwood taking the first and third and the Hammonds and Mr. Hall the second of each two. From these several purchases have come the improved Merino represented by the Hammond flock. They were kept within their own blood and the Atwood blood thus kept intact. The celebrated rams Wooster, Young Matchless, Old Greasy, Old Wrinkley,

Long Wool, Sweepstakes, Gold Drop, Green Mount, and others, attest the worth of the sheep and the skill of Edwin Hammond, who made the selections and directed the breeding of the flock. Dr. Randall says of Edwin Hammond that he was the great leading improver of the Humphreys-Atwood sheep.

By a perfect understanding and exquisite management of his materials this great breeder has effected quite as much of an improvement in the American Merino as Mr. Bakewell effected among the long-wooled sheep of England. He has converted the thin, light-boned, smallish and imperfectly covered sheep into large, round, low, strong-boned sheep models of compactness, and not a few of them almost perfect models of beauty for fine-wooled sheep. * * * Mr. Hammond's sheep exhibit no hardened yolk within the wool and but little externally. In nearly all of them the curves of the wool can be traced to its outer tips. They are dark colored, because they have abundance of liquid circulating yolk, and because they (like all the leading breeding flocks of Vermont) are housed not only in winter, but from summer rain storms. The great weight is made up not by the extra amount of yolk, but by the extra length and thickness of every part of the fleece. In many instances it is nearly as long and thick on the belly, legs, forehead, cheeks, etc., as on the back and sides. The wool opens freely and with a good luster and style. It is of a high medium quality and remarkably even. Mr. Hammond is (1863) intentionally breeding it back to the buff tinge of the original Spanish wool. He has not specially cultivated folds in the skin. * * * In every respect this eminent breeder has directed his whole attention to solid value, and has never sacrificed a particle of it to attain either points of no value or of less value. He has bred exclusively from Mr. Atwood's stock, sire and dam, and since the rams originally purchased of Mr. Atwood by himself and associates has only used rams of his own flock.

The Hammond flock was established and owned in common by William S. and Edwin Hammond until the death of the former, May 8, 1858, when his interest descended to his son, Henry W. Hammond; and in 1859 there was a division of the flock between the uncle and the nephew, but the stock rams of both flocks were always used in each. In 1864 George, son of Edwin Hammond, became a partner with his father in the flock. On the death of Edwin Hammond, December 31, 1870, the flock descended to his son George, and was bred by him until 1874, when it was sold to L. J. Orcutt, Cummington, Mass., under the following circumstances: George Hammond was a large owner in an extensive paper-mill which was built in 1871, and destroyed by fire in the spring of 1872, with a heavy loss. It was rebuilt the same summer on a much larger and more expensive plan. The heavy losses by fire, the depression in business and the great financial crisis that followed in the fall of 1873 carried the company and Mr. Hammond with them. Being anxious to retain his noted flock of sheep, he induced his friend, Mr. Orcutt, who had no sheep, to purchase them from him and hold them until such reasonable time as he could take them back, Mr. Hammond holding and reserving the right to repurchase at any time and to be the breeder and manager of them so long as they remained in Mr. Orcutt's hands. In the same year the noted flock of W. R. Sanford was purchased by Mr. Orcutt for Mr. Hammond, and taken to his farm in Middlebury, where they have ever remained. In 1875 the Henry

W. Hammond flock (42 in number) was also purchased and taken to Mr. Hammond's place. These purchases consolidated the original flocks of W. S. and E. Hammond and W. R. Sanford into one flock under one management in 1875. In 1876 the Henry W. Hammond flock, with their increase, and a fair average of the G. Hammond flock (enough to make the number up to about 100) were sold to J. M. Kirkpatrick, Utica, Ohio. In 1877 the W. R. Sanford flock, with the old Hammond flock were put in the possession of George Hammond and are still owned by him at Middlebury, Vt. In 1887 the flock numbered 112 rams and 195 ewes. The portion of the flock sold to J. M. Kirkpatrick, Ohio, has been bred to pure Hammond rams down to the present day, no other strain of blood having been introduced. It was owned in 1886 by James H. Kirkpatrick, and contained 22 rams and 66 ewes.

Some of the Hammond rams may be noted. Wooster, bred in 1849, whose sire was Atwood's Old Black, was of 100 pounds live weight; his first fleece weighed 12½ pounds; his second, 19¼ pounds. Young Matchless was sired by Wooster, bred in 1850, and had a live weight of about 140 to 150 pounds; his heaviest fleece was 23 pounds. Old Greasy was also sired by Wooster, and bred in 1850. His live weight was about 105 to 110 pounds, and his heaviest fleece 22 pounds. Old Wrinkley was sired by Old Greasy; his weight was 125 to 130 pounds, and his best fleece 23 pounds. Long Wool also was sired by Old Greasy and bred in 1853; his live weight was about 120 to 125 pounds, and he sheared over 20 pounds of long wool of fine style, well filled with white oil. The Lawrence ram, sired by Old Wrinkley, and bred in 1856, was one of the best bred by Mr. Hammond. His live weight was about 120 to 130 pounds, and his heaviest fleece 24 pounds. Little Wrinkley, sired by Old Wrinkley, and bred in 1855, sometimes called the Fine ram, weighed about 100 to 110 and sheared about 19½ pounds of wool. He was the sire of Sweepstakes, already described elsewhere. America, sired by Sweepstakes, and bred in 1859, weighed about 140 pounds in full fleece, and was a square, well molded sheep, with short, strong neck, and stood upon straight, good-boned legs of medium length. His fleece was of extra style and quality, and covered him well on legs and underside, but not, according to modern fashion, upon the head. Length of staple about 2½ inches; oil slightly buff and flowed well to the tip of the wool, which gave him a very dark external coat. He passed through the hands of N. A. Saxton, Waltham, Vt.; C. B. Cook, of Charlotte, and Prosper Elitharp, in all of whose flocks he was used as a stock ram until he died. California was also sired by Sweepstakes, and bred in 1860, and was subsequently sold to Flint, Bixley & Co., of California, for $1,000. The Thousand Dollar ram, bred by Mr. Hammond in 1860, was sold to A. F. Wilcox, Fayetteville, N. Y.; his fleece weighed 25½ pounds. Gold Drop, sired by California, and bred in 1861, weighed in full fleece 140 pounds. His side view was symmetrical and

shapely, with scarcely an elevation on top of the shoulder. His ribs were tolerably well sprung. His legs were of medium length and well placed. He carried a fleece of most excellent quality, even throughout, with a very dark top at the end of the wool. It was dense at all points. His heaviest fleece was 25 pounds, and it covered him well all around, especially on head, legs, and belly. He had a fair neck, tail, and flank. He died in 1865, the property of his breeder, and it was stated that on several occasions Mr. Hammond had refused offers for him running into the thousands. Silver Mine, sired by Sweepstakes, was used by Mr. Hammond, and then sent to Wisconsin, where he made a season, and then returned. Green Mountain was bred in 1864 and in general appearance resembled his sire, Gold Drop. He weighed in full fleece 140 pounds, and was a well formed sheep, with a fine, shapely head, broad, well wrinkled nose, and beautiful, finely turned horns. He had a good fleece, of excellent quality, even throughout, and highly crimped; he was well covered on head, legs, and belly, and did more to fix these qualities in the flock than any ram previously used. The weight of his fleece was 23½ pounds. The staple was 3 inches long; the fiber 4½ inches long; the oil white and well circulated through the fleece. He was a smooth sheep, with fair neck, tail, and flank. There were, besides these, many others who made great improvements in the flocks into which they were introduced, not only in Vermont, but in all the wool-growing States and Territories of the Union from Maine to California.

Another branch of the Atwood flock was that of R. P. Hall, of Cornwall, Vt.. This flock was founded in 1844 by the purchase of rams and ewes of Stephen Atwood and others, in company with W. S. and Edwin Hammond, as elsewhere narrated. In 1845 W. R. Remele became a partner in the ownership of the flock, and the partnership continued until 1849, when the flock was divided. In 1862 John Towle became a partner with Mr. Hall in the ownership of the flock; four years later Mr. Towle sold his interest to E. S. Stowell and Henry Manchester. In 1869 the flock was sold to John Towle. While Mr. Hall owned the flock he sold the ewes to found many flocks of full-blood Atwood sheep, and bred and sold a large number of excellent stock rams. Mr. Towle has since bred the flock without the introduction of other ewes, and it was still in existence in 1887.

William R. Remele, who was associated with Mr. Hall from 1845 to 1849, and dissolved partnership in the latter year, bred his portion of the flock in the Atwood blood until 1875, when he introduced the Robinson blood for three successive seasons; but the produce was all sold out of the flock. In 1886 it numbered 40 rams and 52 ewes.

Edwin S. Stowell founded his Atwood flock by the purchase of ewes from W. S. & E. Hammond in 1853, 1854, and 1855; of 10 purchased in 1858, bred by W. R. Remele, and 6 in 1860, of George Hammond, and using the stock rams of the Hammonds until 1861, when those bred

within the flock were used and these present a grand array. The first was Stowell's Sweepstakes, sire by Peerless, and bred in 1860, afterward sold to Carey, Beyer and Twitchell, Wyandotte County, Ohio. Dew Drop was sired by Sweepstakes, was bred in 1862, and sold in 1869 to John Sheldon, Livingston County, N. Y. Golden Fleece was also sired by Sweepstakes and bred in 1862. He was used very extensively as a stock ram by his breeder and others, and made one season at Naples and Honeoye, western New York. He died in 1874 after earning over $20,000 for his owner. Golden Fleece weighed in full fleece from 140 to 150 pounds, and was a very showy and attractive ram, and justly acquired great celebrity throughout the country. He was even and well balanced in form and general contour, and possessed in a marked degree what would be termed quality in every part; back straight and broad throughout; ribs well arched; shoulders heavy and deep, which was also true of his whole carcass. He had a good heavy neck, tail, and flank, and was well folded at hip and thigh, with some folds back of shoulder also. His fleece was dense, high quality, even, and well crimped, opened in flakes, and showed a style and brilliancy almost unrivaled. He established in the flock what is known as the Stowell fleece. At four years of age he produced 26¼ pounds of wool, at five years 26½ pounds. King Solomon, sired by Golden Fleece and bred in 1865, was sold to go to California. Red Leg, by the same sire, went to California in 1870, and many of later date went to other parts of the United States. In 1880 the flock, which comprised 23 rams and 100 ewes, passed into the possession of Messrs. Dean & Jennings, West Cornwall, Vt.

Another early Vermont Atwood flock is that of C. B. Cook, Charlotte, Chittenden County. In October, 1841, David Cook and his son, Charles B. Cook, bought of Stephen Atwood a ram and 23 ewes, and in January, 1845, they made a further purchase of 6 ewes and Mr. Atwood's best 3 ram lambs, and of Chauncey Atwood 5 ewe lambs. In 1847, in company with Prosper Elitharp, of Bridport, Mr. C. B. Cook purchased a few ewes of Mr. Stephen Atwood and 11 ewe lambs of Chauncey Atwood. Mr. Cook used Hammond rams and those bred within his own flock until 1859, when he purchased of N. A. Saxton a half interest in America the other half coming to Prosper Elitharp two years later. The flock numbered 10 rams and 7 ewes in 1886.

Prosper Elitharp, named above as purchasing Atwood sheep, commenced breeding pure-blood Merinos in 1835 and laid the foundation of his flock by the purchase of ewes of James Baker and D. Smith, of Bridport. A portion of them were bred by Leonard Beedle. A few had crosses of Jarvis blood, but most of them were pure from the Andrew Cock stock. A few ewes were also purchased from the flock of L. C. Remele and 1 from the Rich flock. These ewes were a cross of a Jarvis ram on ewes of the Cock blood. In 1844 the foundation of the Atwood portion of the flock was laid by the purchase of a half interest in the

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HAINES, DEL.

MERINO RAM "GOLDEN FLEECE."

FROM "AMERICAN AGRICULTURIST," 1866.

ram Atwood, bred by Stephen Atwood in 1842, and elsewhere described. At the same time that he purchased the ram he also bought 2 ewes of Mr. C. B. Cook that were descended from ewes Mr. Cook had purchased of Mr. Atwood. Soon after more ewes were purchased of Mr. Cook, and in 1846 3 ewes were purchased of W. S. & E. Hammond that came from the flock of Stephen Atwood. In 1847 Mr. Elitharp and Mr. Cook made a purchase of ewes of Stephen Atwood and his son Chauncey, and upon his part of this purchase Mr. Elitharp used his ram Atwood until he died in 1850. In 1863 the portion of this flock that combined the blood of the Cock, Jarvis, and Humphreys flocks was sold. In 1873 Mr. Elitharp finally disposed of all his flock, selling the last 10 that he had reserved to Otis P. Lee, of Middlebury, Vt., and additions to Atwood blood have been made to it and the flock preserved to the present day. Mr. Elitharp was considered one of the very best judges of sheep of his time, a breeder of excellent judgment, and succeeded in making great improvements in his flock. Ewes of his breeding were in good demand and seldom disappointed the expectations of their purchasers. He also produced some rams of note.

Elitharp was bred by him in 1845; his sire was Atwood and his dam was sired by Black Hawk; second dam bred by William Jarvis, being thus of Atwood, Jarvis, and Cock blood. This ram was sold to Erastus R. Robinson, and used by him as a stock ram and was the sire of the famous old Robinson ram. From the Atwood blood of the flock he bred the Elitharp and Burwell ram, sired by Eureka, and bred in 1868. This ram was sold in 1871 to H. C. Burwell and by him in 1872 to Peet & Severance, and by them taken to California. This ram weighed in full fleece 160 pounds, and was well proportioned and very symmetrical in outline and finish. He was a straight level-topped sheep, running out high and broad at rump and tail, his back and loin also good and strong. He was well arched in rib and had good depth of carcass; neck short and long head, and nose well-shaped and attractive. He was well wrinkled at neck, hip, tail, flank, and at point of shoulder. He was very dark colored at tip of wool, and carried a very dense, attractive, even, and highly crimpled fleece of wool, which opened in flakes. He was well covered all around; especially good at head and legs. The weight of his fleece was 27 pounds; the staple was 2½ inches long. Green Mountain, sired by Golden Fleece and bred in 1864, was sold by Mr. Elitharp to H. Hemmenway, Whitewater, Wis.

Another Atwood flock was that of N. A. Saxton, Waltham, Vt. The foundation of this flock was commenced about 1847 by a small purchase of ewes from W. S. and E. Hammond. Mr. Saxton bred these and their produce to Hammond rams and those of W. R. Sanford, as well as those bred in his own flock, until 1872, when he used the stock rams of O. C. Bacon. Mr. Saxton died in 1874 and the flock was widely dispersed. Two of his good stock rams may be mentioned—the Saxton

ram, bred in 1852 and sired by Wooster, and Prince, sired by America and sold to A. Barringer, of Illinois.

Victor Wright in 1847 began an Atwood flock by the purchase from L. C. Remele of one ewe that Mr. Remele had purchased of R. P. Hall. This ewe was bred by Stephen Atwood and purchased of him by Messrs. Hammond and Hall. In after years many ewes were purchased of the Hammonds and added to the flock. Nearly all the stock rams of the Hammonds were used and also those bred in the flock, among which have been many of great excellence. Mr. Wright died in 1867, after which his widow owned the flock for more than twenty years, when it passed into the hands of the present owner, A. B. Wright, Middlebury, Vt. Among the rams bred by Mr. V. Wright may be mentioned Wright's California, sired by Hammond's Long Wool, and sold in 1861 to Messrs. Hoyt, of California; Old Greasy, sired by California, and sold to R. Perrine, western Pennsylvania; Black Top, sired by Hammond's Gold Drop; Long Wool, sired by Wright's Old Greasy; Don Pedro, sired by Long Wool, and Wrinkley, also sired by Hammond's Gold Drop, and bred in 1863, all of the Atwood blood.

There were many other Atwood sheep taken from Connecticut at an early day. Among the purchasers of them may be mentioned W. C. Wright, S. L. Bissell, and S. W. Jewett in 1844, and soon after Joseph Marsh, C. W. Brownell, and William Gage, each of whom bred pure Atwood sheep for many years. That of Judge Joseph Marsh was bred pure to about the time of his death in 1877. In 1846 Philo Jewett, of Weybridge, bought 8 or 10 Atwood ewes of the Atwoods, and soon after this A. A. Farnsworth, of New Haven, bought all the yearling ewes that Mr. Atwood raised in one year. In 1863 E. N. Bissell, of Shoreham, purchased 5 ewes and a ram of Stephen Atwood, 3 ewes of Chauncey Atwood, 29 ewes and 1 ram of George Atwood, and 6 Atwood ewes of Jerry Smith. These, with those heretofore mentioned, are all the Atwood sheep that Mr. Chapman in 1877 had been able to trace in Vermont. The purchases made from these various flocks and their subsequent dispersion over the State and the United States can not be followed at this time.

It will be remembered that of the early shipments of William Jarvis were 24 Escurials to Richard Crowningshield, of New York. They arrived June 18, 1810. Two of these were purchased by Andrew Cock, of Flushing, L. I., at $1,100 per head. They were ewes. Mr. Cock then made another purchase of the Paular breed, at from $50 to $100 per head, and continued to add to his flock by purchases of the different importations until he ran his flock up to about 80, always selecting them with great care. He never purchased any but the best, was very attentive as a breeder, saw well to his business, and formed an unrivaled flock of sheep. In 1823 Jehiel Beedle, Elijah Wright, and Charles Rich, of Shoreham, through Leonard Beedle, purchased this flock, consisting of about 100. On the arrival of the flock in Vermont it was

divided by the owners, Mr. Beedle receiving one-half, Charles Rich a fourth, and Mr. Wright a fourth. A few of the Beedle flock have descended to this day, unmixed with other than Merino blood. It is not known that the Wright flock has been bred pure, but from that portion of the Cock flock turned over to Charles Rich much of the pure Spanish blood of the present flocks has descended. Charles Rich died in 1824 and his flock descended to his two sons, Charles and J. Thurman Rich. Of these two sons Mr. Chapman says:

> The rich pecuniary recompense, and the meed of fame these men and their heirs have since received, is but a portion of what they deserve as a reward for the judgment and firmness exhibited by resisting the popular mania for Saxony fineness and blood. When Jarvis, Atwood, Blakeslee and almost all gave way, John Thurman and Charles Rich stood firm. It is true that the first three named, with a few others, discovered their error in time to retrace their steps, and save to us much of the good old blood; but their judgments were fascinated and bewildered by the mania for fine wool that swept over the land between 1824 and 1836, vitiating the blood and constitutions of nearly all the flocks of fine-wooled sheep, depleting the pockets and destroying the hopes of their owners.

The Charles Rich branch of this flock was bred pure and unmixed with other blood until 1836, when Charles Rich sold to Erastus R. Robinson 100 of his ewes, and to Tyler Stickney the few selected lambs that were reserved when the sale to Robinson was made, thus laying the foundation of two most justly celebrated flocks.

Erastus R. Robinson continued to breed the Rich sheep in the same line or Cock family until 1845, when he introduced a strain of Atwood blood by the use of the Elitharp ram Atwood to 20 ewes, and by the purchase of the ram Elitharp a year later. An addition of 30 ewes was made to the flock in 1848 by a purchase of Mr. Prosper Elitharp. These ewes were mainly if not all bred by Mr. Elitharp and combined the blood of the Cock, Humphreys, and Jarvis flocks. The ram that was used more than any other, and the one that made the greatest improvement in the flock, was bred by Mr. Robinson. He is known as the old Robinson ram, descended from Atwood ram Elitharp and a Rich ewe and was sold to Tyler Stickney in 1853. He became celebrated as a stock ram, living to the age of 13 or 14 years. He weighed about 100 pounds, and sheared about 14 pounds. His horns were heavy and of the Paular pattern.

Soon after the introduction of the French Merinos into Vermont in 1842 Mr. Robinson procured a ram of this blood, which he used to a third of his ewes one year. These ewes were selected so as to represent a fair average of the flock. The result of this cross was a large increase of the size of the carcass, but a decided decrease in the average weight of fleece, thus very largely decreasing the average of wool to live weight, and very materially increasing the cost of the wool, while the quality was not so good as that grown on the other portion of the flock. This cross, proving so unsatisfactory, was soon weeded out and sold from the flock. At the death of Mr. Erastus R. Robinson in 1854

the flock was divided, a portion falling to the share of his widow, Mrs. Sallie D. Robinson, and a portion to his son, Darwin E. Robinson, and these were bred as they previously had been and contained a preponderance of Paular blood, and made the foundation of several superior flocks. E. R. Robinson was an excellent judge of sheep, a very judicious breeder, and made great improvements in the flock which he established and bred with so much credit and profit. Sheep of his breeding were in demand, and no better certificate could be given to prove a sheep meritorious and pure-blooded than one that certified it was a pure-bred Robinson sheep.*

Tyler Stickney, to whom Charles Rich sold 12 ewe lambs in 1836, founded his flock in 1834, previous to which he had been in copartnership with Mr. Rich in breeding sheep, and when they divided, one ewe, that afterwards became celebrated as the dam of Hero and Fortune, fell to the share of Mr. Stickney. This, with the 12 ewes purchased in 1836, formed the basis of his flock, which has been kept together and the breeding directed by one person, for over forty years; and the flock has a longer continuous existence than any, save one. The same year that Mr. Stickney purchased the 12 ewes of Mr. Rich he selected from the flock of William Jarvis a ram lamb, which Mr. Jarvis stated to be the first selection he had ever permitted from his rams of any year before selecting for his own use; this ram Consul was used for eight years, and after this rams of Atwood, Hammond, Rich, and Robinson blood, great care being taken to use none but pure Spanish Merinos. The improvement of the flock is shown in the facts that whereas Consul, bred in 1835, sheared about 14 pounds unwashed wool at his best, Fremont, in 1868, sheared 24⅞ pounds, the latter the heaviest shearing ram of his day, and for years not equaled in weight of fleece, also from an ewe shearing only 8 or 9 pounds unwashed wool to one shearing 20 pounds in 1878. The Stickney is one of the leading and generally recognized best lines of Merino blood. Tyler Stickney died in January, 1882, and the flock he bred from 1834 to the day of his death is still in existence.

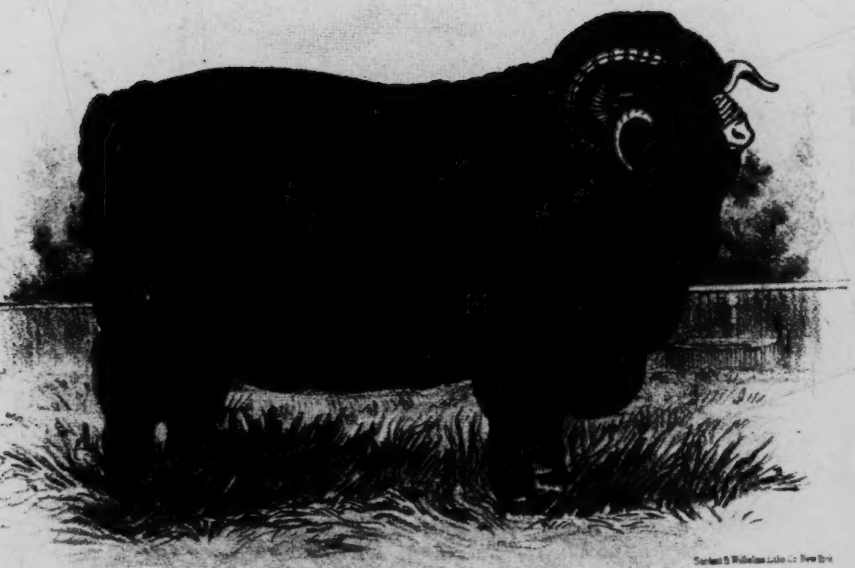
Hero, a noted ram, was bred by Tyler Stickney in 1840. His sire was Consul, a Jarvis ram, and his dam a pure Cock ewe, bred by Charles Rich. He was sold when 2 or 3 years old to A. L. Bingham, Cornwall, Vt. His heaviest fleece weighed 13 pounds. Fortune, also bred by Mr. Stickney, had the same sire and dam as Hero. He was sold to L. C. Remele, by Mr. Remele to Jonathan Wilson, and by him to S. W. Jewett, in whose hands he attained great celebrity. He weighed about 160 pounds in full fleece, and gave at his third shearing 13 pounds 4 ounces of wool, imperfectly washed in the brook. General Fremont was bred in 1865, and was one of the most remarkable and heaviest shearing rams of his day, but was not as widely known as his merit deserved, on

* Register of the Vermont Merino Sheep Breeders' Association, Vol. I.

HAINES, DEL.

SPANISH "PAULAR" MERINO RAM "FORTUNE."

FROM "NATIONAL RECORD OF AMERICAN MERINO SHEEP REGISTER," VOL. II, 1858.



HAINES, DEL.

"GEN. FREMONT."

FROM "REGISTER OF VERMONT MERINO SHEEP ASSOCIATION," VOL. I, 1875.

account of the great depression of the sheep industry in his time. He weighed in full fleece 165 pounds; was symmetrical in outline, and well proportioned. His fleece was very dense and covered him well at all points. It was about medium in quality, fairly crimped, and heavily charged throughout with a buff oil. Staple about 2½ inches long. He had a finely shaped and well-covered head, and heavy and closely turned horns. His first fleece was 17 pounds; the third, his heaviest, was 34⅞ pounds. Nine fleeces weighed 243 pounds, or an average of 27 pounds each. He was sold at 2 years of age to J. L. Parker, Whiting, Vt., who took him to Samuel Griswold's place, Corfu, N. Y., where he left some excellent heavy shearing stock. He was repurchased by Mr. Stickney, and died in 1875.

Of the flocks of Charles Rich, Erastus B. Robinson, and Tyler Stickney, Mr. Albert Chapman says:

> It will readily be seen that they came finally to possess the same three bloods, the Atwood, Jarvis, and Cock. Although the proportions might differ somewhat, in the main and substantially they were the same. The individual tastes of each may have somewhat varied their practice as breeders, and consequently may have affected the characteristics of the individual sheep that were bred in their flocks, but when we call a sheep's blood Rich, Stickney, and Robinson, we mean one bred from their flocks, and combining the bloods of the Atwood, Cock, and Jarvis flocks.

John T. Rich, son of Charles Rich, came into possession of one-half his father's flock in 1836, the flock founded in 1823. He sold none of his ewes until 1838, at which date he sold two, one to L. C. Remele and one to Judge Wright, and gave each of them one. He continued to breed in the Cock or Paular line by rams bred within the flock until 1841, when he introduced a ram bred by William Jarvis, and selected from his flock. At this date his flock consisted of about 150 breeding ewes, with a due proportion of young sheep. Mr. Rich also bred a Jarvis ram to some of his ewes in 1842, and soon after the Atwood blood was introduced by using Elitharp's ram Atwood to a few ewes in 1845, and by other rams subsequently. In 1844 Mr. Rich sold 110 ewes to Joseph Sheldon, of Fairhaven, Vt. At the death of Mr. Rich, October 12, 1846, the flock was inherited by his two sons, John T. and Virtulan Rich. The rams that were the get of the Jarvis ram were not used in the flock, and a part of the ewe lambs also were sold out and the flock continued to be bred in the Cock or Paular line, the rule with John T. Rich being to breed back, using rams that showed pedigree through the sires direct to the Cock flock. By a careful investigation it was ascertained that in 1874 the blood of the flock was about five-sixths Paular; the two-thirds of the remaining one-sixth Humphreys; and the remainder Jarvis blood, other than Paular. John T. Rich died September 27, 1876, and the flock became the property of Virtulan Rich, the present owner.

Dr. Henry S. Randall, who visited this flock, says:

> These sheep in 1840 were heavy, short-legged, broad animals, full in the quarters, strong-boned, with thick, short necks and thick coarse heads. The ewes had deep

and sometimes plaited dewlaps and folds of moderate size about the neck. The rams had larger ones. They were darker externally than the Jarvis sheep, but not so much so as the Atwood sheep, indicating that their wool contained more yolk than the former and less than the latter. The wool was longer than that of either of the other families, very thick, and covered them better on the belly, legs, and head. But it was inferior in fineness, evenness, and style. It was quite coarse on the thigh, and hairs were occasionally seen on the neck folds. The lambs were often covered with hair when yeaned, and their legs and ears were marked by patches of tan color which subsequently disappeared except on the ears, where it continued to show faintly. They were better nurses and hardier than either of the other families. I have remarked in a former publication that they were precisely the negligent farmer's sheep. They encountered short keep, careless treatment of all kinds, exposure to autumal storms and winter gales, with a degree of impunity which was unexampled. Their lambs came big, bony, and strong, and did not suffer much if they were dropped in a snow bank. In 1842 and 1843 this flock was bred to a Jarvis ram—peculiarly dark, thick, and heavy fleeced, and compact in form for one of his family—the object of Mr. Rich being to avoid breeding in-and-in and to improve the quality of his wool. For the same object and to increase the yolkiness of the wool, a dip or two of the Atwood blood has been since taken; but it has always been made a point to breed back after taking these crosses, so as essentially to preserve the blood and distinctive characteristics of the original family. The Messrs. Rich have succeeded in all these objects, and have kept up well with the rapid current of modern improvement. Their sheep are not as large, nor do they yield so much wool per head as the improved Infantados, but they possess symmetrical forms which are remarkable for compactness. The body is shortish, and very thick, with their ancient good fore and hind quarters; and their heads, though thick and short, have lost their coarseness. Their fleeces are even and good. But that merit which gives them their great popularity in Vermont and elsewhere is their adaptation to thin, scant herbage, and to their qualities as working flocks. They demand no extra care or keep to develop their qualities, are always lively and alert; and though gentle and perfectly free from restlessness of temperament, they are ready to rove far and near to obtain their food. And for all they consume they make the most ample returns. While they will pay for care they will thrive with but little care. In a word, they remain, par excellence, the negligent farmer's sheep.*

The Rich flock of sheep, founded in 1823, is the oldest flock of pure-bred Merinos now existing in the United States, without change except by regular family descent. It has been kept on the same farm, and owned in the same family, for sixty-eight years. From it have been sent sheep to all portions of the United States, and to other parts of the world.

A branch of this flock, taken to Michigan, remains to be noted. In 1848 John W. Rich purchased three rams and a few ewes from the flocks of J. T. & V. Rich, Tyler Stickney, and D. & G. Cutting, and took them to Lapeer, Mich. These purchases were made partly on account of Hon. Charles Rich, formerly the owner of the part of the Rich flock sold E. R. Robinson and Tyler Stickney. The sheep subsequently became the common property of Charles and John W. Rich, and were bred entirely within the flock taken to Michigan until 1851, when a ram was purchased of J. T. & V. Rich and used a number of years. In 1853 an addition was made to the flock of 10 ewes from the flock of Tyler Stick-

*The Practical Shepherd. Henry S. Randall, 1863.

ney, and in 1859 another addition was made of the flock of Thomas Slayton, who had a pure Stickney flock. After the purchase of the Slayton flock, rams bred within the joint flocks were used until 1863, when John W. Rich purchased two rams, one of T. Stickney, the other of David Cutting. These rams were used a number of years, or until they died, when rams sired by them were used. John W. Rich died in 1872, but previous to his death he purchased the interest of Charles Rich, except 10 ewes, a division of the best 20. With the exception of these 10 ewes the flock, in 1872, came into the possession of the present owner, John T. Rich, of Elba, Mich.

A ram raised by John T. & V. Rich, which made a great improvement in the flock, was Mountaineer, bred in 1865, who weighed in full fleece 150 pounds, and was a strong-boned, well-formed, round-carcassed sheep. He had a well-shaped head, nose short and broad, and well wrinkled. He was well wooled to the hoof all around. He had a dense fleece throughout, and his head and belly were well covered. He had a mellow, pink skin.

About the year 1835 Eben R. Murray, Augustus Munger, and a man named Bundy, purchased a flock of about 150 Merino sheep of breeders living at Newport, R. I., mainly, if not all, from the flock of Joseph I. Bailey, and took them to Whiting, Vt., where a portion of them went into the hands of S. T. Baker, from his into those of James M. Ormsbee, and from his to David and German Cutting, where and when the foundation of the Cutting flock was laid. The evidence seems conclusive that these sheep were pure descendants from the importation of Capt. Paul Cuffe into Newport, September, 1810, and known to have been purchased of William Jarvis at Lisbon. The Cuttings made their purchase of James M. Ormsbee—about 80 ewes—in 1841. Two rams of the same blood, of the first purchase of ewes, were purchased with them and were used at first, but in 1846 Atwood blood was introduced and for several years subsequently nearly or quite all the rams used in the flock were of this blood. The Atwood blood was also introduced by way of ewes purchased, until finally the flock became by this, and more by the rams used, largely composed of this blood, but no special efforts are known to have been made to keep this blood pure or distinct from the other. Cutting blood, then, stands for a combination of the Atwood and Rhode Island flocks.*

Soon after this flock was commenced it was divided by the brothers David and German Cutting, but the blood and breeding of the two flocks were substantially the same. After the decease of David Cutting his flock came into the possession of his nephews, G. A. Cutting and H. M. Perry, and the other part of the flock belonging to German Cutting, since his death has descended to his heirs. Both flocks are still kept up.

The Rich branch of the Cock sheep, crossed to a ram bred by Wil-

*Register of the Vermont Merino Sheep Breeders' Association, Vol. I.

liam Jarvis, and still later with the blood of the Atwood flock, the Cutting blood descended from the importations of Paul Cuffe and Richard Crowningshield, and some admixture of the Blakeslee blood constitute what is known as the American Paular. The most successful breeders of these sheep have aimed to secure type and quality in their flocks, and have placed this above any special line of descent from importation, or from any one of the earlier flocks. In pursuing their course of breeding they have made use of the best specimens of the breed, and as a rule have avoided too close in-and-in breeding, and have achieved results unattained elsewhere when measured by weight and quality of carcass or of fleece, either gross or scoured. The aim has been to produce a well-formed and symmetrical animal, of constitutional vigor, carrying a dense, oily fleece of good quality throughout. Folds or wrinkles have been cultivated in a marked degree, and an amount of oil secured in the fleece that many have thought to be extravagant in the extreme; yet sheep of this class have made great improvement on the wool-growing flocks, the wrinkles contributing toward density of fleece and covering, and the oil proving interchangeable with wool product.* A good specimen of the American Paular is Prince Bismarck, the property of John P. Ray, Hemlock Lake, N. Y. In full fleece he weighed 200 pounds, and yielded a fleece of one year's growth of 35 pounds 9½ ounces.

The sheep purchased by Zebulon Frost, in 1816, of Andrew Cock and Effingham Lawrence, descended to his son Abraham Frost, from whom, in 1832, William Walker purchased 10 ewes to commence a flock. Soon after this Mr. Walker purchased of J. Thurman Rich 12 or 15 ewes of the Cock blood, and rams in the flock were used until it was managed by H. W. Walker, and it is believed that up to 1845 it was kept entirely pure from admixture with other blood. Since the latter date Atwood, Hammond, and Stickney blood have been introduced. The flock is still in existence.

In 1835 Merrill Bingham, of Cornwall, Vt., purchased in the vicinity of Lanesboro, Mass., 110 Merino ewes, descendants from Col. Humphreys' flock; 40 of them were 12 or 15 years old, the lambs of imported ewes. This was the foundation of a flock, which, in 1845, numbered over 600 large, well-shaped, pure Merino sheep. In June, 1844, in company with A. L. Bingham, he purchased of the Shakers at Enfield, N. H., 103 sheep, which, when sheared, turned off such very heavy fleeces of fine, clean wool, and gave such promise of being profitable to breed, that in September following another visit was made to Enfield and the remainder of the flock purchased, consisting of 58 ewes and 12 rams. The Enfield flock were descendants of Livingston sheep, or rather Gaudaloupes imported by Mr. Livingston. In 1845 this flock of Mr. Bingham averaged 5 pounds 3 ounces of wool from 587 fleeces.

In 1838 A. L. Bingham, of Cornwall, bought of Messrs. Buck &

* John P. Ray, secretary of New York Merino Sheep Breeders' Association.

Atwater, of Connecticut, 20 ewes, which he added to a small number that he had already purchased of German Cutting. In 1841 he purchased of Jacob N. Blakeslee 16 ewes, and added them to his flock, with 8 that he had purchased of Chauncey Atwood, and 27 that he had purchased of Joseph J. Bailey, of Newport, R. I. In 1842 Mr. Bingham purchased 42 ewes and 2 rams of Mr. Bailey, for which he paid $661, and in 1843 he purchased the remainder of Mr. Bailey's flock, 51 sheep. This stock is said to have been imported by Capt. Paul Cuffe and J. D. Wolf. They were bought by Mr. Bailey's father at the wharf and taken direct to his farm, where they were bred pure, always breeding from rams raised in the flock. Mr. Bingham's flock was described in 1845 as being very uniform, remarkable for size, low on the leg, heavy boned, wide chested, large and thick necked, considerably ruffled; heavy fleeced and dark colored on the outside; the wool firm, thick, and long in the staple. On May 23, 1866, 45 yearling ewes and 1 two-year-old Atwood ram were sheared and yielded 503 pounds of wool, or an average of 11 pounds 3 ounces to the ewes, while the weight of carcass averaged a fraction less than 56 pounds. The ram's fleece was 25 pounds 2 ounces, his weight when shorn 114 pounds 10 ounces.

Parts of the flocks of Merrill and A. L. Bingham became the property of Rev. L. C. Bingham, Williston, Vt., his flock in 1845 numbering 200 full-blooded sheep. They were nearly equally divided between Guadaloupes and Paulars, so called. Thirty-three of them were, with their lambs, purchased of Joseph I. Bailey, and were considered by Mr. Bingham as pure Paulars, if there were any such in the country. The Guadaloupes came from Enfield and Lebanon, N. H. A part of his heaviest wooled sheep came from Merrill Bingham's flock, a part from W. C. Wright's and A. L. Bingham's.

One hundred and eighty-seven sheep of this flock in 1845 averaged 5 pounds 1 ounce of wool each, washed in a swiftly running stream.

3 ewes sheared each	7 pounds and upwards.
12 ewes sheared each	6 to 7 pounds.
46 ewes sheared each	5 to 6 pounds.
88 ewes sheared each	4 to 5 pounds.
33 ewes sheared each	3½ to 4 pounds.

His stock rams sheared as follows:

1 yearling Paular	10 pounds 8 ounces.
1 yearling Paular	8 pounds 10 ounces.
1 yearling Guadaloupe	7 pounds 4 ounces.
1 2-year old Guadaloupe	8 pounds 8 ounces.
1 2-year old Paular	8 pounds 8 ounces.

In 1846 Mr. Bingham purchased a number of Jacob N. Blakeslee's flock, and about the same time the Collins flock of Rambouillet sheep and the first ram of the John A. Taintor French importation.

M. W. C. Wright commenced a flock by the purchase of W. R. Sanford of 10 ewes, warranted by Mr. Sanford to be pure Jarvis, the blood

of which he purchased of Messrs. Grant & Jennison, Walpole, N. H., who certified to Mr. Sanford that the sheep were pure descendants of the Jarvis importations, and about the same time Mr. Wright purchased 1 ewe from Mr. Jarvis, and four or five years after 13 ewes of J. T. & V. Rich. Other blood has since been introduced, and the flock is still in existence, the property of D. J. Wright, Shoreham, Vt. One of the noted stock rams of the day was bred by Mr. M. W. C. Wright, about 1846. His sire was Fortune, bred by Tyler Stickney in 1844, and his dam an excellent ewe, bred by William Jarvis. The ram was Black Hawk, and weighed about 100 to 110 pounds. Dr. Randall, writing in 1862, speaks of this flock as uniting the three most distinguished families of American Merinos—the Jarvis Paulars, the mixed Leonese, and the Atwood Infantados. The rams from this flock were scattered widely through New York, and they and their descendants gave much satisfaction to purchasers wishing to breed for a high quality of wool.

A noted flock was that of George Campbell, of Westminster, Vt., founded in 1839, by a purchase of 20 ewes of Humphreys blood, and 20 of Mark Crawford, of Jarvis and Humphreys blood. In the same year a pure Jarvis ram was purchased of Daniel Mason, and in 1842 another was purchased of William Jarvis. These rams and some bred from them were used until 1847, in which year 5 ewes of Atwood and Jarvis blood were purchased of Nathan Cushing, and a ram lamb of Ebenezer Bridge, of Atwood and Jarvis blood. This ram was used until his death, in 1861, when Young Wooster, a ram of Cutting or Rhode Island blood, was introduced into the flock, and in 1862 8 Atwood ewes and 15 of the Atwood, Rich, and Jarvis blood were added to the flock. In 1840 the average yield of wool per head of his flock did not exceed 3½ pounds. Each successive year gave a larger yield; the clip of 1850 was 4¾ pounds per head, and that for 1851 was a fraction over 5 pounds of well-washed wool, aside from a quarter of a pound of taggings. During the whole time there was a gradual increase in fineness. In breeding, Mr. Campbell sought to establish a flock which would produce the largest growth of wool for the amount of hay consumed. Quantity and quality of wool, with a hardy constitution, were the leading objects he kept in view. The means employed to effect this were: First, the selection of such rams as possessed these characteristics in a high degree; second, discarding every ewe that produced either a light fleece or one not of a good grade of fineness; and third, feeding in such a manner as to develop and maintain in the animal a high degree of vigor. By these means he affected a gradual and highly satisfactory improvement in his flock.

From Sweepstakes and his own stock Mr. Campbell bred the celebrated 12 sheep which took the three prizes at the International Exhibition at Hamburg in 1863, and established the fame of the Vermont Merino in Europe. The number of sheep entered for premium was

1,771. Nine hundred and thirteen were of the Merino class and were from every part of Europe—France, Italy, Austria, Russia, and Germany being represented. The only sheep exhibited from America were those of Mr. Campbell, and he took three premiums—two first and one second. One first premium was taken for length of staple, another for weight of fleece. The longest staple from these sheep measured 3½ inches, others 3¼, 3⅛, and 3 inches; the shortest was 2⅜ inches. These prize sheep were subsequently sold to Count Shen Thors, of Silesia, for $5,000, strong confirmation of the fact that America was producing Merinos more valuable than any in Europe.

Some of Mr. Campbell's sheep were sold to go to Dunedin, in the southern part of New Zealand, and in 1884 their descendants retained many of their characteristics, good size, larger than the flock from which they descended, with fleeces of fair density and great length of staple.

The first French Merinos taken into Vermont were the flock of D. C. Collins, of Connecticut, purchased by L. G. Bingham, of Williston, prior to April, 1846. In the fall of 1846 one ram of the Taintor importation was added to the flock, and in 1847 1 more ram and 8 ewes.

Between 1847 and 1853 A. L. Bingham purchased of John A. Taintor 161 French Merinos, for which he paid $37,500. In 1853 Mr. Bingham had a public shearing of some of his French sheep at Sudbury, Vt. Eighty ewes were shorn, 15 of them having been imported that year. The heaviest fleece was 33½ pounds, the lightest 11 pounds. The carcasses of the 80, after shearing, weighed 8,240½ pounds, an average of 103 pounds. The total weight of the wool was 1,344½ pounds, unwashed, an average of 16¾ pounds per ewe. The shrinkage in washing was 56 per cent. A 2-year-old ram weighing 216 pounds sheared 30½ pounds of wool. In 1856 another shearing showed the following:

Thirty-eight French Merino ewes; average weight of body, 76¼ pounds; fleece, 17⅝ pounds.

Nine French Merino rams; average weight of body, 94½ pounds; fleece, 19½ pounds.

Fifteen half French and Spanish ewes; average weight of body, 56 pounds; fleece, 13¼ pounds.

All of these were shearlings.

In 1851 George Campbell purchased some French Merinos from the flock of Mr. Cugnot, principally, and after their arrival they were sheared, with this result:

Average live weight of ewes, 103 pounds; average weight of fleece, 12½ pounds, unwashed.

The proportion of wool to live weight was 1 to $8\frac{3}{16}$. Lambs 5 months old, although they suffered much from the voyage, gave an average of 3½ pounds. The ram Matchless, when 5 years old, weighed 280 pounds, and gave a 25-pound fleece. Mr. Campbell made other importations, and of some Silesians also, but all previous importations were

eclipsed by those of S. W. Jewett, who imported from France a large number of Merinos at a cost of over $50,000. They sheared all the way from 12 to 26 pounds of wool. They did not find ready sale in the East and were taken to California, where they were better appreciated and better adapted to the climate. In 1883 a Western paper contained the following: "Large numbers of sheep were recently driven from California and across the Rocky Mountains to Texas, because sheep bred in California are usually of a larger size, which it is said they have obtained from the amenity of its climate and from a cross of French sheep derived from those imported into Vermont some thirty-five years ago."

In 1853 some of Mr. Jewett's sheep were sent to Alabama and Missouri, and in 1857 some went from the Campbell flock (also 10 Spanish Merinos and 2 Silesians) to Buenos Ayres.

Several Vermont breeders made experiments with the French Merinos by crossing the rams on Spanish ewes, but the result was not satisfactory. The increase in the size of carcass was great, but the average weight of the fleece decreased. It was thought, too, that they were less hardy than the Spanish Merino. They were soon condemned as unfitted to Vermont sheep husbandry, and generally disappeared. It was contended by those who were their advocates that they were not given a fair trial; that had they been treated as they should have been the result would have been different. Attention was called to the fact that these sheep, previous to their importation into the country, received liberal feeding, and had been under the watchful care of the shepherd and his dog, and were, consequently, less qualified than our naturalized breeds to seek their subsistence over a wide range of short pasturage.

In May, 1851, George Campbell made an importation of some Silesian Merinos, and in June following William R. Sanford returned from Europe with 25 Silesians, mostly 1 year old, of good forms, uniform in appearance, and remarkably covered with wool on all parts of the body. The wool was oily, but not gummy. The average of the flock of 600 from which they were selected in wool was 4 pounds, well washed. These sheep were purely descended from the Infantado and Negretti families of Spain, from a selection taken thence to Silesia in 1811 and bred with great purity and care. The Silesian was but little extended in Vermont, and made no impression on the character of the sheep or the system of husbandry.

From the known facts here presented and from the presence of other full-blooded and mixed flocks in various parts of the State, but of which no reliable data are attainable, it is certain that Vermont took a generous advantage of all the importations and of the best flocks to supply herself with Merino sheep, and laid solidly the foundation of that industry for which she is justly noted. There was a gradual and careful dissemination of the best blood, and of the 798,800 sheep owned in the State in 1830 a good proportion were fine-wooled. In 1836 the State

had 1,099,011 sheep, yielding 3,571,786 pounds of wool. The great improvement made by her breeders is well known and has been partially stated in the preceding pages. Consul Jarvis said that his flock from 1811 to 1826 averaged 4 pounds washed wool, his best stock rams shearing 6½ pounds, or equivalent to 9¾ pounds unwashed fleece. This may be taken as a starting point. In 1844 Mr. Jarvis stated that he had bucks in high condition that sheared as high as 7½ pounds each, or 11¼ pounds of unwashed fleece. In 1846 an Atwood ram sheared a 15-pound fleece, which, when thoroughly cleansed, gave 6 pounds of scoured wool, and shortly after Mr. Atwood gave the average weight of fleeces in his flock as 5 pounds for his ewes, lambs the same, wethers 6 pounds, and rams 7 to 9 pounds. The heaviest ewe's fleece was 6 pounds 6 ounces and the heaviest ram's fleece 12 pounds 4 ounces—all washed as clean as possible in the river, and sheared in six or eight days after. In 1854, at a sheep-shearing in Addison County, 8 rams and 2 yearling ewes, whose aggregate weight was 990 pounds, gave 109 pounds 14 ounces unwashed wool, or a trifle short of 11 pounds each. The live weight of the sheep and weights of the unwashed fleece were:

	Carcass.	Fleece.
	Pounds.	*Lbs. oz.*
Spanish ram	71	7 8
Do	115	13 9
Do	99	10 15
Do	127	14 12
Do	135	11 11
Do	91	9 4½
Do	129	13 2
Do	125	15 11
Yearling Spanish ewe	50	5 9½
Do	57	7 11

These figures show a considerable advance on the weights as given in 1846. The improvement held good in the ordinary wool-growing flocks of the State. In Rutland County good flocks sheared 5 pounds per head, washed on the sheep; in Washington County, 4 to 4½ pounds; in Orange County, 2½ to 6 pounds, according to condition; flocks of 100, which it was estimated consumed 18 tons of hay, giving 600 pounds of wool and raising 85 to 90 lambs. At Springfield, Vt., flocks of 300 to 400 gave 3½ to 4 pounds annually per head, and J. W. Colburn, in June, 1851, clipped 500 fleeces averaging a trifle over 4 pounds each, after a thorough cold-water wash on the sheep's back.

In 1866 Mr. A. L. Bingham sheared from 45 ewes 503 pounds of wool, or an average of 11 pounds 3 ounces each, unwashed; and 1 two-year-old ram gave 25 pounds 2 ounces. In the same year Rollin J. Jones, of West Cornwall, Vt., sheared 45 ewes of 508 pounds 10 ounces, or an average per fleece of 11 pounds 5 ounces. The gross weight of the ewes after being shorn was 2,515 pounds 3 ounces, or an average weight per head of 55⅞ pounds.

On May 1, 1867, about 1,000 of the sheep-breeders of Rutland County were present at the first annual shearing of their association at Rut-

land. The animal which produced the greatest weight of fleece in proportion to weight of carcass belonged to Mr. A. E. Smith, of Clarendon—live weight, 63¼ pounds; fleece, 14⅛ pounds. Next came Matchless—live weight, 76 pounds; fleece, 15¾ pounds. On the same day there was a shearing at Shelburne, at which prizes were awarded for the best fleeces, and 16 sheep were sheared whose average weight of fleece was 13 pounds 8 ounces. The lightest fleece of the 16 weighed 7 pounds 14 ounces, from an animal which weighed 58 pounds, while the largest fleece weighed 20 pounds 10 ounces, from an animal whose weight was 120 pounds 3 ounces. One weighing 91 pounds yielded a fleece of 15 pounds 12 ounces, and another a fleece of 10 pounds 15 ounces from a carcass which weighed only 56 pounds. Still another carcass, weighing only 63 pounds, yielded 16 pounds 12 ounces of wool. O. C. Burton, of Windham, sheared a fleece of thirteen months' growth that weighed 25 pounds 2 ounces from a ram four years old that weighed 133 pounds after being shorn. V. M. Hubbard, Rochester, sheared his ram Romeo of 21½ pounds of wool, the growth of one year lacking seven days, and C. N. Hayward, of Bridport, sold to L. J. Wright 5 ewe tegs which sheared 76½ pounds of wool, the heaviest fleece weighing 17½ pounds. Charles Washburne, of Reading, sheared 23½ pounds of wool from a two-year-old buck which had only ordinary keeping, and D. T. Clough, of Thetford, sheared from a two-year-old buck 21 pounds of wool; the buck after shearing weighed 93 pounds. W. B. Denio, of East Rupert, from a ewe 22½ months old, sheared a fleece the growth of 11½ months which weighed 18 pounds, and she had a lamb by her side. Her first fleece was 12¼ pounds. At Springfield there were sheared 3 rams and 3 ewes with these results:

One two-year-old ram; weight, 116 pounds; fleece, 17 pounds 8 ounces; cleaned, 7 pounds 8 ounces.

One two-year-old ram; weight, 120½ pounds; fleece, 18 pounds 8 ounces; cleaned, 6 pounds 12 ounces.

One four-year-old ram; weight, 123 pounds; fleece, 20 pounds 8 ounces; cleaned, 6 pounds.

The 3 ewes washed fleeces of 5 pounds 14 ounces, 5½ pounds, and 4 pounds 11 ounces. The average shrinkage of the ram fleeces was 67.76 per cent, and of the ewe fleeces 51.32.

An advance over any previous record was made in 1868, when Stowell's ram Red Leg, at two years old, sheared a fleece of 28 pounds from a live weight of 110 pounds, a percentage of fleece to live weight of 25.4 per cent. This fleece when thoroughly scoured weighed 8 pounds 1½ ounces, of which 3 pounds 15 ounces was No. 1 wool.

Passing over an extended period from 1868 to 1882, we have a record, compiled for the Vermont Register, by which it appears that 36 rams, three years old or over, sheared 1,120 pounds, an average per head of 31 pounds 1 ounce, and an average per cent to carcass on these given of 25.2. The heaviest fleece weighed 37 pounds 8 ounces, from a ram bred by A. E. Perkins, of Pomfret, and owned by Brown & Hilton,

Anson, Me. The live weight of the animal was 132 pounds, and the fleece was 28.4 per cent of the live weight. The ram yielding the fleece holding the highest per cent to the live weight was of Vermont blood and owned by S. Jewett, Independence, Mo. He weighed 100 pounds and gave a fleece of 36 pounds 4 ounces, or 36.2 per cent of the live weight. Of the 36 rams of this class 19 sheared 30 pounds and over.

Twenty-eight rams, two years old, sheared 867 pounds, an average per head of 28 pounds 14 ounces, and an average per cent of fleece to carcass on those given of 25 per cent. The heaviest fleece was 39 pounds from a ram bred by J. J. Crane, of Bridport, Vt., and owned by S. G. Crites, New Philadelphia, Ohio. The highest per cent of fleece to live weight was reached by a ram weighing 81 pounds 8 ounces, who gave 26 pounds of wool, or 31.9 per cent.

Twenty yearling rams sheared 410 pounds 5 ounces, an average of 20 pounds 8 ounces, and an average per cent of fleece to carcass on those given of 22.5. The greatest weight of fleece was 26.4 from a ram of Vermont blood, bred and owned in Missouri.

Fifty-four ewes, two years old and over, sheared 1,064 pounds 9 ounces, an average of 19 pounds 11 ounces, and an average per cent of fleece to carcass of 26. The greatest fleece weighed 25 pounds, shorn from an ewe of Atwood blood, owned in Missouri.

The Vermont Register for 1887 shows a continued improvement. Notwithstanding the severe and discouraging depression for wool-growers and sheep breeders, well calculated to check improvement and stimulation, Vermont breeders generally kept up their flocks and aimed at a higher standard. The weights of 1882 were excelled. Of 52 rams three years old and over, bred in Vermont, shearing 30 pounds or more, 4 exceeded the highest weight of 1882, 1 reaching 39 pounds; 35 of the best sheared 1,221 pounds 13 ounces, averaging 34 pounds 14 ounces, or 3 pounds 13 ounces more on the average than those shorn in 1882. In the class of rams two years old, 29 bred in Vermont sheared 837 pounds 12 ounces, averaging 28 pounds 10 ounces, or 2 pounds 6 ounces more than the average of the best 29 of 1882. In 1882 forty-six ewes, bred in Vermont, averaged 19 pounds 6 ounces. A like number in 1887 sheared 980 pounds 8 ounces, averaging 21 pounds 5 ounces, or a gain of only 1 ounce less than 2 pounds each.

The shearing of 4 ewes and 3 rams of the flock of F. & L. E. Moore, Addison County, Vt., in 1884, in addition to weight of carcass and fleece, gives length of fiber and staple:

Sex.	Age.	Carcass.	Fleece.	Length of fiber.	Length of staple.
	Years.	*Pounds.*	*Pounds.*	*Inches.*	*Inches.*
Ewe	2	78.12	19.12	3½	2½
Ewe	2	69.12	16.6	3½	2½
Ewe	1	57.6	15.14	3½	2½
Ewe	1	57	17.2	4½	2½
Ram	3	132.8	29.7	3½	2½
Ram	2	105.4	28.1	3½	2½
Ram	1	81	20.3	3½	2½

The Vermont Register for 1892 gives 17 rams, three years old and over, whose fleeces exceeded 30 pounds each. These, as will appear from the accompanying table, were not all Vermont-bred sheep, but descended from Vermont stock.

Breeder.	Age.	Live weight.	Fleece.	Growth.
	Years.	*Pounds.*	*Lbs. ozs.*	*Days.*
H. C. Burwell & Son, Bridport, Vt	3	115	37 3	358
Do	3	182	39	365
E. N. Bissell, East Shoreham, Vt	3	171	31	364
D. B. Galusha, Williamstown, Mass	3	98	32 9	360
S. B. James, Hoosick, N. Y	4	180	41 8	.....
T. F. & C. P. McConnell, Ripon, Wis	6	200	33	369
C. P. Morrison & Son, Addison, Vt	3	115	31	334
V. Rich, Richville, Vt	6	161	35	364
E. E. Stickney, East Shoreham, Vt	3	135	31	365
J. T. Stickney, Shoreham, Vt	4	138	30 10	365
Do	3	172	32	353
G. H. Smith, Addison, Vt	3	144	31 13	375
L. E. Shattuck, Stanberry, Mo	4	202	33 6	365
Uriah Wood, Brandon, Wis	3	181	30	369
Do	3	160	30 8	369
F. C. Wood, Saline, Mich	3	130	32	364
Do	3	170	30	364

Among the fleeces from rams two years old was one shorn at the annual shearing of the Vermont Sheep Shearing Association, from a ram bred by Byron Smith, of Addison, Vt., that sheared 44 pounds 3 ounces, this being 7 pounds 14 ounces heavier than any recorded in the Vermont Register, and, as far as authentically reported, the heaviest fleece taken from a ram two years old. Among the ewe fleeces recorded was one from an ewe bred by H. C. Burwen & Son, of Bridport, Vt., now owned by E. D. King, of Burlington, Kans., that sheared 32 pounds 8 ounces, being 4 pounds 4 ounces heavier than any ewe's fleece heretofore recorded, and the heaviest ewe's fleece yet reported.

The improvement in the per cent of wool to live weight since the introduction of the Merino into Vermont is wonderful. In 1812 the best rams produced but about 6 per cent; down to 1844 it had increased to 15 per cent, and in 1865 to 21 per cent. From this date the increase was rapid to 22, 24, 30, and even 36 per cent. There were forwarded from Vermont to the Paris Exposition in 1878 67 fleeces selected for fine style and quality of wool, as well as weight of fleece. The per cent of wool to live weight for the whole number was 22; of the best 30, 25.2; of the best 6, 30.1; of the best 1, 36.6. Twenty-one of the 67 were rams, 46 were ewes. At a public sheep-shearing at Middlebury in April, 1882, 11 stock rams averaged 23 per cent; 14 two-year old rams, 23.4; 10 one-year old rams, 20.3; 7 two-year old ewes, 25.6; 12 one-year old ewes, 26.3. The whole 54 averaged 23.3. The gain is not as good in whole flocks, but the proportion of wool has been nearly or quite trebled.

At the annual State shearing of Vermont for 1885 there was a slight retrogression, which is thus alluded to by Mr. Albert Chapman: "It will be remarked that there is a falling off in the weights attained by rams and ewes one year old, a very good indication that our breeders

are becoming convinced that the forcing system to attain large size and heavy fleeces the first year is neither desirable nor profitable, and the gains in the mature sheep show that slower development tends to much better and larger improvements in the end."

A table of averages by classes for 1882 and 1885, showing the gains or improvements in three years in all the classes except yearling rams, is here given:

	Weight, 1882.			Weights, 1885.		Gains.	
Rams 3 years old and over:	*Lbs.*	*oz.*	Rams 3 years old and over:	*Lbs.*	*oz.*	*Lbs.*	*oz.*
14, all averaged	27	6	22, all averaged	30	9	3	3
14 best, averaged	27	6	14 best, averaged	32	14	5	8
Heaviest	35	10	Heaviest	38	13	2	3
			13, shearing 30 pounds or over, averaged	33	3		10
3, shearing 30 pounds or over, averaged	32	9	3 best, averaged	37	14	5	5
			1 beat best previous Vermont record				2
Rams 2 years old:			Rams 2 years old:				
16, all averaged	23	12	28, all averaged	26	11	2	15
16 best, averaged	23	12	16 best, averaged	28	15	5	3
Heaviest	29	3	Heaviest	36	3	7	
1 sheared 28 pounds or over	29	3	10, shearing 28 pounds or over, averaged	29	14		11
Rams 1 year old:			Rams 1 year old:			Loss.	
15, all averaged	17	7	17, all averaged	17			7
15 best	17	7	15 best, averaged	17	6		1
Heaviest	24	6	Heaviest	20	6	4	
4, shearing 20 pounds or over, averaged	22	5	2, shearing 20 pounds or over, averaged	20	5	2	
Ewes 2 years old and over:			Ewes, 3 years old and over:			Gains.	
14, all averaged	17	4	84, all averaged	18	1		13
14 best, averaged	17	4	14 best, averaged	21	5	4	1
Heaviest	21	5	Heaviest	23	8	2	3
			12, shearing 20 pounds or over, averaged	21	9		9
2, shearing 20 pounds or over, averaged	20	12	2 best, averaged	22	12	2	
			50 best, averaged	19	4		
			7 beat best previous Vermont record.				
Ewes 1 year old:			Ewes 1 year old:				
15, all averaged	13	5	16, all averaged	13	10		5
15 best, averaged	13	5	15 best, averaged	13	11		6
Heaviest	15	8	Heaviest	15	8		

Mr. Chapman, who presents this table in the third volume of the Register of the Vermont Merino Sheep Breeders' Association, remarks that the falling off in weight of fleece and highest average should not beattributed to any lack of real excellence in the young rams shorn in 1885, nor should it be judged from this result that those shorn would not ultimately shear as heavy or even heavier fleeces than those shorn the first year, but the cause must be found in the fact that too many vauable young rams have been lost, or improvement stopped in them individually by excessive forcing for a heavy fleece at 1 year old; a practice, however, which is now less fashionable among our breeders than it was a few years ago.

But heavy fleeces do not always indicate a large product of wool such as is used at the card, the percentage of cleansed wool being sometimes ridiculously small and the shrinkage very great. The results of cleansing some Vermont and Michigan wools are shown in the following table, prepared for the Vermont Register. They were cleansed between 1882 and 1887, and the numbers attached to the sires refer to the number as given to the stock rams in that Register:

Table of scoured fleeces.

Name and post-office address of breeders.	Owners.	Sire.	Age.	Live weight.	Weight of fleece.	Days' growth.	Weight of cleansed wool.	Shrinkage.	Cleansed wool.
RAMS.				*Lbs. oz.*	*Lbs. oz.*		*Lbs. oz.*	*Per cent.*	*Per cent.*
Barnum & Powers, Shoreham	Barnum & Powers	Success	2	131 0	25 4	366	8 6	66.84	33.16
E. A. Birchard, Shoreham	C. H. & J. A. James, Middlebury	Rip Van Winkle (535)	3	128 8	28 0	364	7 7	73.89	26.11
H. C. Brown, Whiting	Brown & Ketchum, Whiting	Eureka, 65 (577)	2	108 0	29 5	366	9 0	68.10	31.90
C. P. Crane, Bridport	J. E. Smith, Ypsilanti, Mich	Goldfinder (1502)	2	107 0	28 14	378	10 3	64.72	35.28
G. A. Cutting, East Shoreham	G. A. Cutting	J. T. Stickney, 146 (441)	2	107 0	27 5	364	7 0	74.49	25.51
F. & L. E. Moore, Shoreham	Moore & Stickney, Shoreham	Wall Street (1604)	2	107 0	29 1	362	9 13	66.26	33.74
V. Rich, East Shoreham	V. Rich	Broker (1454)	3	125 0	23 6	365	9 1	61.23	38.77
E. E. Stickney, East Shoreham	E. E. Stickney	Centennial (442)	5	113 0	25 7	355	8 5	67.33	32.67
A. D. Willard, Middlebury 9 rams.	Cherbino & Williamson, Middlebury	C. & W., 329 (812)	2	116 0	29 0	.....	9 2	68.54	31.46
Total					244 10	.....	78 6	67.97	32.03
EWES.									
E. N. Bissell, East Shoreham	E. N. Bissell	Rip Van Winkle (535)	2	82 0	17 4	361	6 10	61.60	38.40
H. C. Burwell, Bridport	L. B. Faulkner, Dansville, N. Y.	H. C. Burwell, 165 (1023)	2	88 8	19 6	361	7 4	62.60	37.40
A. Chapman, Middlebury	A. Chapman	Rip Van Winkle (535)	2	87 0	15 11	357	6 13	56.58	43.42
C. P. Crane, Bridport	A. A. Wood, Saline, Mich	Goldfinder (1502)	2	73 0	20 6	365	9 2	55.21	44.79
C. P. Morrison & Son, Addison	C. P. Morrison & Son	Prince Arthur	2	65 0	19 8	363	6 5	67.70	32.30
G. H. Smith, Addison	G. H. Smith	Eureka 3d (223)	3	85 0	17 9	370	7 8	57.30	42.70
H. W. Walker, Richville	H. W. Walker	Banker (471)	2	84 0	19 7	357	7 11	60.50	39.50
I. G. Wooster, West Cornwall	A. A. Wood, Saline, Mich	Rip Van Winkle (535)	5	82 0	22 6	380	7 4	67.78	32.22
A. A. Wood, Saline, Mich 9 ewes.	A. A. Wood	M. Sheldon, 48 (1407)	2	60 0	16 8	366	6 0	63.34	36.36
Total					168 3	.....	64 9	61.62	38.38
Aggregate					412 13	.....	143 1	65.35	34.65

These results are considered as very gratifying to Vermont breeders, as showing a large per cent of clean wool and a correspondingly small shrinkage from the unwashed fleeces in most of them. Some of them are remarkable in that respect, notably those of C. P. Crane, Bridport, Albert Chapman, of Middlebury, and G. H. Smith, of Addison, cleansing respectively 44.79, 43.42, and 42.7 per cent. All were ewes.

All the fleeces were cleansed by manufacturers and were as thoroughly done as they practice with the wool they usually manufacture into cloth fit for their cards. The great advantage of this wool after being cleansed, in consequence of its superior strength of staple and elasticity in comparison with the weaker staple of Australian wool, that shrinks so much more in the processes of manufacturing after the wool has passed through the cleansing process, was manifest in these fleeces and is becoming better appreciated by the manufacturers.*

Along with the improvement in the fleece has followed an increase in the size of the sheep, an increase of 15 to 25 per cent, and with it an improvement in their build, appearance, and beauty, accompanied with greater vigor of constitution. When the Spanish Merinos were first taken into the State, rams weighed from 100 to 110 pounds and ewes from 70 to 75 pounds. These weights have been increased on an average slightly exceeding 20 per cent, in some cases 30 and 40 per cent. It has been found that the small sheep, with equal length and thickness of fleece, on account of greater proportionate surface, will produce the largest per cent of wool, and the tendency a few years ago was to sacrifice size to per cent of fleece. It was found that some small sheep were yielding a larger per cent of wool than their size and constitution would warrant their sustaining. Consequently breeders began to gradually increase their size, a feat which it was believed could be accomplished without sacrificing any of the good qualities already attained. It is not believed that Vermont will ever be able to produce large Merinos. The conditions are unfavorable to this. It is found, however, that when Vermont Merinos, after reaching mature age, are taken to any section of the United States outside of New England they will increase in size. This is claimed by sheep-breeders in all States South and West and admitted by Vermont breeders. While Vermont can produce a stocky, thick-set carcass, the South and West produce more length of body and legs, a more rangy and larger sheep. The same causes may produce the difference that is observed in the build of men raised in different sections of the country. Finally, as to size, the Vermont breeders prefer a medium-sized sheep, with a round, deep body, short, thick neck, broad, straight back, square buttock, straight from tail to the hoof, length from nose to tail 3 to 3 feet 8 inches, height to top of shoulder five-eighths of length, depth of body from two and one-half to four times the length of leg. The soil and climate favor the production of this build of Merino.†

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* Register of the Vermont Merino Sheep Breeders' Association, Vol. III.

† Henry Lane, in Vermont Agricultural Report, 1881-'82.

There has been and is yet much criticism directed against the Vermont Merino, or rather against the system of breeding, on account of the oil in the fleece and the folds or wrinkles in the skin. Vermont breeders are ready to answer such criticism by asserting their belief that a profitable fleece can not be raised without a large amount of oil, and that folds are indications of heavy fleeces. The per cent of oil, however, is no greater than it was years ago, and no breeder has ever been able to produce a heavy cleansed fleece without it. It promotes the growth of wool, and those who have tried to dispense with or materially reduce it have met with a serious loss of wool and a deterioration of strength, fineness, and evenness of fleece. A deficiency of oil causes the staple to be dry, harsh, and weak, and the tendency will be to gradually become thin and coarse. Breeders who have attempted to breed smooth sheep with wool free from oil have not only failed in weight of fleece, but have also failed in quantity and quality of cleansed wool. Wool owes much of its softness and brilliancy to the presence of a sufficiency of oil.

Albert Chapman, the secretary of the Vermont Association, contributed to the National Live Stock Journal a defense of the oil in the fleece, asserting that, while it is not desirable to run a flock too much to oil at the expense of the amount of cleansed wool, but given the large amount of cleansed wool already attained, it is very important that stock rams should be quite oily, even though their extra heavy fleeces should not represent a corresponding amount of scoured wool. It is a well-recognized fact with those breeders who have attracted the widest notice by the improvement accomplished in their flocks, that rams with dry, bulky fleeces are rarely good, even stock-getters, though their fleeces may shrink but little in the scouring tub; that those with a larger amount of oil will, as a rule, give us more even, excellent stock than those of the other class. This oil is characteristic of the breed of Merino sheep, and is of great value to preserve the health and strength of fiber while the fleece is growing. Though it may cause a greater loss in the scouring tub, when properly cleansed the wool is stronger and more valuable than the product from drier and lighter fleeces. A very important fact, which should not be lost sight of when considering this subject, is that the larger number of flocks, especially where the largest flocks of sheep are kept, are very deficient in the proper and desirable amount of oil to best preserve the health and strength of fiber, and if a few flocks possess an amount in excess of the most desirable quantity, stock from them is needed and should be in demand to impart a portion of that excess to those that are deficient.

Mr. Chapman closes his defense of the oil in these words:

If those who fear we are breeding too much grease in the fleeces of our full-blood Merinos will take the trouble to investigate the effects of the cross of these very oily rams upon the flocks of dry-fleeced sheep in all parts of our country, especially on

those of Texas, Colorado, Kansas, and New Mexico, they will find the great improvements there effected in all of the qualities which make the fleeces valuable to the manufacturer, will be quite sufficient to convince them that we have no reasonable grounds to fear we are breeding too much oil in the fleeces of our pure-bred flocks of Merino sheep, in which the stock rams to improve those of the larger wool-growing flocks must be produced.

As to the wrinkles or folds, their development over the whole carcass is encouraged, as they are indicative of heavy fleeces. But some breeders carry them to excess. It is a fact that the heavy fleeces are the product of wrinkly sheep. But within the last year there has been a change. The folds are thicker, but not quite as large, with less coarse wool on them, the coarse hair on the wrinkles and thighs in the best bred flocks having measurably disappeared. The prevailing fashion is to have from "three to five heavy folds on the neck, not large on the upper side, but large on the under side; two or three short folds on and immediately back of each elbow or arm; fine, thick wrinkles running down the sides, but not extending over the back. Wrinkles across the hips, some times from the tail in the direction of the stifle, and some times at right angles with them, fold also around the tail to give it a wide appearance, and also folds across the thigh with a deep flank. These folds, except on the neck, unless too large, do not show when a year's growth of wool is on the sheep. These folds are what please the eye of a breeder of taste." The gentleman from whom we quote—an accomplished breeder—asserted his firm belief that "any breeder who attempts to breed from a ram without wrinkles and a certain amount of oil will fail to realize any improvement in the wool-producing capacity of his flock."

The pedigree committee of the Vermont Merino Sheep-Breeders' Association in the first volume of the Register, say:

If we admit that our best flocks of Merinos have oil and wrinkles in excess of the wants of the practical wool grower for his wool-bearing sheep as a class, we contend that we are not breeding altogether with a view of wool-growing in Vermont, but our most profitable product is blood that will produce improvements in the wool-bearing capacities of flocks in localities where it is hard to keep them up to the most profitable standard. Hence it is for our best interest, as it is for theirs, that we shall be able to furnish them with sheep having these qualities in a very marked degree, and greatly in excess of what may, perhaps, be their ideal.

The same committee in the third volume of the Vermont Register (1887) held the same view and reported:

In regard to the amount of oil and of folds or wrinkles that breeders are so generally advised to discard, the committee believe that the natural amount of these peculiar to the Merino breed of sheep can not be dispensed with without a tendency to a thinner, lighter fleece, with a staple of less strength and health, and ultimately less profitable to both the producer and manufacturer.

It is the general testimony of Vermont breeders that the increased weight of the Merino fleeces is due largely to the increased thickness of the fleece, or in other words, to the greater number of fibers on the same surface of pelt. There are no records of the actual thickness of

the average Merino fleece of fifty years ago by which that improvement can be measured, but it is evident in a marked degree. From measurements made with great care and unchallenged accuracy in 1878, it was ascertained that 1 square inch of surface of a pelt of a nice fleeced Merino ram contained 230,000 fibers. The pelt was at least one yard square, consequently contained 300,000,000 fibers, a number almost too vast to comprehend, but supposing each fiber to measure 2½ inches in length and placed end to end, they would extend about 12,000 miles, or nearly half way round the globe. And this thickness is capable of still greater development, for the open spaces bear a large proportion to the space occupied; comparable, as has been stated, to the open space in thick-timbered woodland to that upon which the trees stand. These close, thick fleeces are not only profitable, but are necessary in cold climates such as Vermont and our northern tier of States.

Dr. Cutting's investigation also disclosed the fact that in fineness and evenness of wool the improvement was nearly equal to that made in other directions. English measurements showed that the size of Merino fibers was one seven-hundredth of an inch, and super-electa Saxon wool (which is the finest in the fleece) was one eight hundred and fortieth of an inch. Dr. Cutting's measurements are these as given in the Vermont Register, volume 1:

No.	Variety of sheep.	Age of sheep.	Weight of fleece.	Live weight.	Size of staple in millimeters.	Size of staple in fractions of an inch.
	RAMS.		*Lbs. oz.*	*Pounds.*		
1	Banker	3	31 0	106	.0215	1/1180
2	Patrick Henry	5	37 0	147	.0235	1/1080
3	Stub	4	35 0	121	.0255	1/996
4	Stock ram	3	33 0	128	.027	1/940
5	....do	2			.027	1/940
6	....do	5			.0275	1/923
7	....do	7	21 8	91	.024	1/1058
8	....do	5	32 8	132	.0295	1/861
9	....do	2			.024	1/1058
10	Ram teg	1			.018	1/1411
	Average rams					1/1058
	Highest or finest					1/1411
	Lowest, or coarsest					1/861
	EWES.					
11	Breeding ewe	6	10 3		.035	1/726
12	....do	12	9 11		.0135	1/1881
13	....do	10	12 0	80	.024	1/1058
14	....do	4			.015	1/1693
15	....do	6			.021	1/1209
16	....do	10	13 12		.0205	1/1238
17	....do	13	10 0		.0265	1/958
18	....do	4	12 12	82	.0245	1/1036
19	....do	12	12 8		.021	1/1209
20	....do	2	20 0	86	.024	1/1058
21	....do	3	19 0	64	.021	1/1209
22	Ewe teg	1			.02	1/1269
23	....do	1			.0145	1/1751
24	....do	1			.0225	1/1129
	Average Merino ewes					1/1058
	Finest					1/1751
	Coarsest					1/726
	Average of both rams and ewes					1/1058

Subsequently Mr. Chapman procured samples of the finest Silesian wool, one from a ram and one from a ewe. These, with samples from a Merino ram and ewe, were placed in the hands of Prof. William McMurtrie, of the U. S. Department of Agriculture, who after careful measurement reported the results in fractions of an inch:

Silesian ram, average of 120 measurements ..... $\frac{1}{1200}$
Improved Merino ram, average of 120 measurements ..... $\frac{1}{1212}$
Silesian ewe, average of 120 measurements ..... $\frac{1}{1212}$
Improved Merino ewe, average of 120 measurements ..... $\frac{1}{1212}$

Each lock of the four had twenty-five crimps to the inch. As the Silesian sheep are generally considered as among the very finest in point of wool the close rivalry speaks volumes for the Vermont Merino.

There has also been an improvement in the evenness and strength of the fiber. It was not many years ago that the outer end of the wool fiber was coarser than the rest of the fleece. Now this defect is bred out and the fiber has a uniform thickness throughout, and there is also a greater uniformity of fleece from all parts of the body even to the wool on the folds or wrinkles.

The length of staple of the sheep shown by George Campbell at Hamburg in 1863, was from $3\frac{1}{2}$ to $2\frac{3}{8}$ inches. The average length of staple of the Vermont fleeces taken to the Paris Exposition in 1878 was $3\frac{1}{4}$ inches. Some of them measured $4\frac{1}{4}$ inches. At a sheep-shearing at Middlebury, Vt., in 1882, 5 of the sheep shorn measured in length 3 inches; 17, $3\frac{1}{4}$ inches; 10, $3\frac{1}{2}$ inches; 9, $3\frac{3}{4}$ inches; 2, 4 inches; 1, $4\frac{1}{4}$ inches; 2, $4\frac{1}{2}$ inches, and 2, $4\frac{3}{4}$ inches. The 48 averaged a little over $3\frac{1}{2}$ inches. The average increase in length of staple during half a century of improvement is estimated at not less than 35 per cent.

Length of staple, however, is not compatible with weight and thickness of fleece, and it has been found that few of the rams or ewes yielding the heaviest fleeces have a staple of more than average length. The ram that has furnished the very heaviest fleece published is reported as growing the shortest staple of any of the heavy shearing rams recorded. The Vermont breeders do not encourage length of staple, believing that increased length is obtained at the expense of weight of fleece by a diminution of its thickness, and while not recommending breeding for a shorter staple they express an opinion that great weight of fleece can not be attained by breeding for excessive length of staple, and that breeding from rams of medium length and great density will increase the weight of fleece much faster than breeding from rams of longer staple but thinner wool.

There was, at first, a breeding toward diversity in the flocks, but the tendency now is to uniformity, most breeders differing but little as to the most desirable type and points of excellence. All breed heavy fleeces, uniform and of fine quality, and a vigorous constitution.

There is that about the soil and climate of Vermont that seems peculiarly favorable to the growth and rearing of Merino sheep, or, as happily

expressed on one occasion by the late Dr. George B. Loring, "her hills are the natural seed-bed of the Merino." But certain sections are more favorable than others for their perfect growth, and Addison County, the leading Merino sheep county in the State, with her more than twenty towns, has but 6 or 8 peculiarly adapted to their perfect development; and it is remarked that it is sometimes the case that the locality that has all the conditions for the production of a superior breed may all be taken in with the naked eye from the top of some central hill.

There is a subtle influence of climate and soil on wool which it is important to know, and which can not be disregarded by those who desire to make a success of wool-growing. It has been observed that if a flock of New England Merinos be divided into four and one part placed east of the Connecticut River, at Walpole, N. H., another on the west side of the river, in Vermont, another on the western border of Vermont, and the fourth on the eastern border of New Hampshire, within three or four years there will be such a difference in the quality of the wool that an expert on being informed that the four kinds of wool were from these different points would be able to locate it, and tell which grew in each place.

The introduction of the Merino into Vermont was for the purpose of wool-growing and the improvement of the common sheep. Now the breeding of the sheep is the principal pursuit, wool-growing being an accompaniment. In 1815 there were many full-blood flocks, and others of high grade, and their wool was generally worked up in the woolen factories recently established. By 1820 some had disappeared, but many still remained, some of them full-blood, which in 1825 or 1826 were crossed with the Saxon Merino. When the Saxons were introduced they were generally crossed with the Spanish Merino and their grades, and some pure-blood Saxon flocks were started. A few years' experience demonstrated the fact that they were not adapted to the rigorous climate and system of sheep husbandry of the State; they were discarded and a return was made to the Spanish Merino. But meanwhile they had inflicted a grievous injury by ruining nearly all the old flocks. Very few had escaped the cross and these were mostly small ones. Consequently many persons sold out their fine sheep and grades, abandoned wool growing altogether, and turned their attention to breeding mutton sheep. A few, however, having faith in the Spanish Merino, sought out such as had escaped the general contamination, purchased a few, and began anew the formation of pure-blood flocks. One of the first of these was William R. Sanford, who journeyed into New Hampshire and bought of Grant and Jennison 20 pure-blood old ewes, bred by William Jarvis from his Spanish stock. This was in 1830, before the inferiority of the Saxon had been generally discovered. Mr. Jarvis also had been led away by the Saxon mania and crossed a portion of his flock with them. Fortunately he had not crossed all of

them and was enabled to furnish pure-bloods for many buyers, among whom were Prosper Elitharp, L. C. Remele, Myron W. C. Wright, Alfred Hull, Jesse Hines, and others, these purchases being made between 1830 and 1840. These men pursued the even tenor of their way, improved the sheep with such light as they had before them, amid the discouragement of low prices for wool and a want of appreciation among wool-growers for the class of sheep they were breeding.

Prior to 1836 the Spanish Merinos were known by that name, or as "old-fashioned Merinos" to distinguish them from the Saxons. On January 8, 1836, a correspondent of the Cultivator suggested the name American Merino. At this time the change in the sheep had been so great that an animal bearing all the characters of the original was not to be found. This correspondent said:

For years I have been a sheep-breeder, and the term "old-fashioned Merinos" conveys to me a distinctive perception of an animal and a particular family of animals which existed in this country soon after their general introduction from Spain. They are now rarely to be found. If another name is more desirable, let them be called the American Merino, for in truth they were first bred in this country by crossing the different flocks which were imported from Spain. I will instance a flock within my knowledge. The person who commenced the flock was interested in the original importation, and therefore had an opportunity to select individuals in reference to a particular object. He did so, having in view a farmer's sheep that should give quantity with as fair quality as could be obtained. The little choice bore the marks and brands of five different Spanish flocks. They were crossed as was judged best; but their lambs were by no means uniform in their appearance or value, but in a course of years, with the original object steadily in view, there came a race of sheep having the general appearance of the Paular, the fineness of the Escurial, and the close-wooled qualities of the other flocks. They had also the large size of the Nigretti. The sheep from this little beginning were scattered far and near, with a high reputation. In 1826 the clip of that and the previous year was sold at 50 cents; with that exception it never sold so low. The same course was followed by others, and these flocks are of the "old Merinos," and I like it, for it reminds me of the times when our sheep gave 4 and 4¼ pounds of wool, whereas now they only give us 2 to 2¼ pounds.

In 1837 the number of sheep in Vermont was 1,166,234, giving 2,915,385 pounds of wool. Assuming that her 300,000 people used 9 pounds each, this was a surplus over the wants of her population of 215,885 pounds. Having no manufactures at home the greater part of the wool was sold out of the State, and her woolen goods were bought in New York, Connecticut, and Massachusetts. In 1840 the number of sheep had increased to 1,681,819, yielding 3,699,235 pounds of wool. The Saxon Merino declined some from 1830 to 1840, though there were many flocks still kept up, and it was with great reluctance that their defects were acknowledged. In 1840 the Saxony averaged 2½ pounds of wool, the Spanish Merino 3½, and the common sheep 3 pounds. From 1830 to 1840 Merino wool sold from 35 to 60 cents; average price, 52 cents.

About the time the Saxon Merinos were most rapidly passing out of the sheep husbandry of the State, 1840 to 1850, the French Merinos were introduced, and, at first, received with some favor. Their large

frames and corrugated skins, with their gross but uneven fleeces, appealed to the eye, but they were found to be inferior to the Spanish Merino, now rapidly regaining the favor it had lost for many years. The Atwood blood was liberally brought into the State from Connecticut, and the improvement begun which has been carried to such unparalleled success. But toward 1850 there was a great depression in the woolen manufacture. Wool fell to 25 cents, and many were discouraged and went out of the business altogether, selling their high grade Merinos at from 75 cents to $1.50. Thousands of them were bought up at these prices and driven to Virginia, where they were disposed of to considerable advantage to the dealer. Full-blooded Merino ewes were sold in various parts of Vermont at from $6 to $10, and lambs were offered at $1.50. The decrease in the number of sheep from 1840 to 1850 was extraordinary. It fell from 1,681,819 in the former year to 1,014,122 in the latter, a loss in two years of 667,697 sheep and 298,518 pounds of wool. By 1850 the Saxony had practically disappeared, and the French Merino was at its height. Wool-growing was not generally profitable, and there was a general reduction in flocks. It cost $1.25 to $1.50 to keep a sheep a year, and the general average did not exceed 3 pounds in ordinary wool-growing flocks, which at 40 cents would amount to $1.20, or less than the cost of growing. But in flocks which sheared 5 to 6 pounds of well-washed wool there was a living profit which measurably sustained the industry.

About 1850 there was a slight increase in the demand for wool and prices began to advance. The French Merinos were being still further introduced and as rapidly discarded, and the Spanish Merino steadily gaining ground, both in profit and the appreciation of the people. But the total number of sheep was gradually diminishing. The low and fluctuating price of wool contributed to this result. Under the impression that the great West would depress the price so low that competition would be impossible, many of the farmers disposed of their flocks. But, on the other hand, the quantity of wool increased and its quality improved. It was evident that the Spanish Merino had attained a higher degree of perfection in the State than in any other State. Soil, climate, and skill in breeding had all contributed toward giving it a wide reputation for superior sheep. The long cold weather incident to the State gave an advantage over competition in a milder climate, and it was assumed that the natural law in the animal economy that the covering of an animal would adapt itself to the temperature of the region where it lived would undoubtedly hold true as to sheep bred in Vermont. The thick heavy-wooled Merino of that State, bred in more southern latitudes, generally diminished its now unnecessary coverings, and the offspring, after a few generations, exhibited those desirable points in a less marked degree. Hence the Vermont breeder relied upon a market for his surplus stock for breeding purposes, and in that direction pursued his business.

Sheep declined in number from 1,014,122 in 1850 to 752,201 in 1860, and wool declined from 3,400,717 pounds in the former year to 3,118,950 pounds in the latter. The average per head in 1850 was 3.35 pounds; in 1860 it was 4.14 pounds, or a very marked increase of 24 per cent. The price of wool advanced from 1850 to 1860 to an average of 42½ cents, the extremes being 30 and 55 cents.

The war of the rebellion stimulated the demand for wool and increased the value of breeding flocks, and many full-blooded Merinos were sold to cross on the common or scrub sheep of the Western States and Territories. In 1862 and 1863 Merino rams sold for all prices from $100 up to $2,000, and the profits of the breeders were bountiful. Wool also increased in price, both fine and coarse, and sheep husbandry was in a prosperous condition. But this unprecedented prosperity could not always last. The war of the rebellion ceased, and the immense stock of woolens held by the Government thrown upon the market depressed wool to a ruinous figure, caused the suspension of many woolen mills, and drove many Merino wool-growers into other branches of husbandry. Two counties that in 1860 kept the largest number of sheep of any in the State, during this depression in the price of sheep and wool in 1868 changed to a large extent their sheep farming to cattle and dairying, and there were similar changes in other parts of the State. There was a great increase in the number of sheep from 1860 to 1865, but from 1866 to 1870 the decrease was so great that in the latter year the number indicated a loss during the ten years from 1860 to 1870, of more than 170,000.

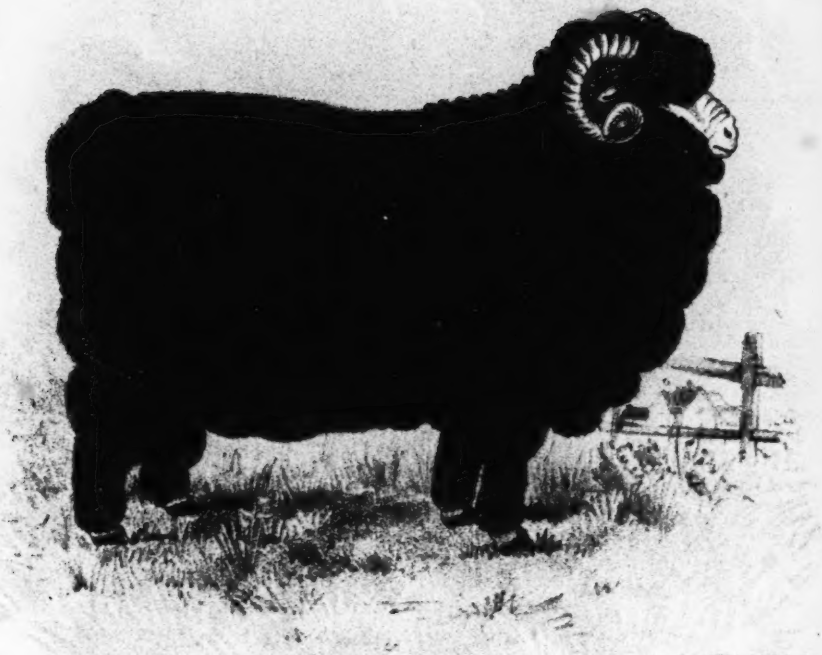
On the revival of manufactures after 1870, and under the great extension of wool-growing in the Territories and on the plains of the West and Southwest, there was a demand for pure-bred Merinos, and large numbers were shipped. In 1874 many were shipped to Washington Territory; in 1876 large numbers were sent to Texas, Maine, and elsewhere. From Middlebury, Addison county, there were shipped in 1877 29 carloads; in 1879 41 carloads of rams to the Southwest. In 1880 60 carloads, and in 1881 71 carloads, each containing from 100 to 150 head, were sent. To be exact, from 1877 to 1881 there were shipped from this one station 6,777 pure Merinos, purchased for the improvement of sheep in other sections of the country, and the demand was in excess of the production. These sheep were exclusive of a large number shipped in small lots ordered by express. Of the 6,777 there were sent to Ohio 2,284, to Texas 1,728, to Michigan 1,230, to Kansas 668, to Pennsylvania 303, to Missouri 268, to Maine 106, to Colorado 134, and 56 to Illinois.

The superiority of Vermont sheep was acknowledged at the Centennial Fair of 1876, when of the 13 first-class awards and 15 second-class, 9 of the former and 4 of the latter were received by Vermont breeders. These were received in common with the breeders of Merino sheep from other States. Besides these, there were 4 other special competi-

tive prizes or awards where the prizes were given for the best only. The sweepstakes prize of awards for the "best American Merino ram of any age" was given to H. C. Burwell, Bridport, Vt., for his ram Bismarck. Bismarck weighed in full fleece 170 pounds, and was one of the most perfect types of an American Merino ever seen. In form and general contour he was of the short-horn pattern. Back straight throughout and very broad, while at the same time he had great depth of carcass. He possessed a wonderful constitution and stamped his own impress in a marked degree, and was a very successful sire of both rams and ewes. His head was short, broad, and well carried up; nose short, of good breadth, well wrinkled, and very soft and silky to the touch. Fleece very dense, even, of most excellent style and quality, highly crimped, opened in flakes free without cross fiber and covered him to perfection at all points, notably so on head and legs. Staple, 2¼ inches long; fiber, 3½ inches long. His oil was slightly buff in color, circulated freely throughout the fleece, and coated him extremely well on the surface. His neck was one of the heaviest ever carried by a Merino ram and was proportionately folded at hip, tail, flank, and at point of shoulder. He also had some heavy side folds which ran well under and across the belly. His heaviest fleece was 32½ pounds; sixth fleece 31½ pounds.

There was a prize of $100 offered by the Pennsylvania State Agricultural Society for the best flock of Merino sheep, to consist of one ram and four ewes, bred and exhibited by one breeder. This prize was taken by Joseph T. Stickney, of Shoreham, Vt. Centennial, which stood at the head of the flock, was a strong, vigorous, well-made ram, attractive and showy in general appearance, and weighed in full fleece 165 pounds. His folds were well placed to suit modern fashion, being massed at neck, tail, hip, thigh, and flank, with a due proportion on the under side. His fleece was dense and well carried all around. It was even, of good quality and well crimped, and opened in flakes. Oil buff, heavy, and well distributed; length of staple, 2¼ inches; length of fiber, 3½ inches; weight of fleece, 35 pounds.

The revision of the tariff in 1883 checked the Merino sheep industry in Vermont, and sales in 1884 of well-bred Merinos were limited. Many of the small flocks of the State were kept intact, but without increase, while others were wiped out entirely. Common flocks suffered much reduction, due to the low price of wool and the bad outlook for the future. In 1885 there was a small increase in business and a better feeling among breeders. There were some compensating features in the depression of the wool industry beginning in 1883 and extending to 1887 and 1888. Flocks were judiciously cleared of inferior sheep, and the quality of those retained greatly improved by more care. For three and four years past many of the best sheep of Vermont have been exported to Australia and other foreign parts and sold at good prices. The Vermont rams crossed on the Australian ewes give an increase in



Sarony & Major Lith. Co. New York

HAINES, DEL.

BISMARCK.

FROM "REGISTER OF VERMONT MERINO SHEEP BREEDERS' ASSOCIATION," VOL. I, 1879.

HAINES, DEL.

CENTENNIAL.

FROM "REGISTER OF THE VERMONT MERINO SHEEP BREEDERS' ASSOCIATION," VOL. II, 1888.

the weight and density of the fleece, especially over the back and hips, which helps to keep out the storms and rays of the sun from penetrating the fleece. In 1887 and 1888 many rams were shipped to the Argentine Republic and to the Cape of Good Hope.

Within late years there has been a tendency among Vermont woolgrowers and among some breeders to grow toward the Delaine type of sheep, to get a mutton and wool combination. This movement is not countenanced, however, by the Vermont Association, who predict that those who cross out to secure that type of sheep will not find in increased size a profitable substitute for liberal keeping. There is also a reviving interest in the French Merino sheep, and there are a few breeders of them.

The best breeders of Vermont have continued their efforts to improve their Merino flocks in all desirable points, and have not been induced to give up the great improvements they have heretofore attained in the destiny and value of their fleeces for the popular cry for smooth sheep bearing long, thin, light fleeces. They still claim the blood of their flocks will be in demand to close up the ranks and call together the flocks scattered by breeding exclusively to rams without folds with long fleeces. Neither have they sacrificed the size and constitutions of their sheep by breeding for small sheep with too large percentage of wool and too many wrinkles, although many breeders may have erred in this direction. Their aim has been to increase the size, constitution, and length of staple of the Merinos of Vermont as fast as it can be accomplished without sacrificing the substantial and rare qualities heretofore attained and universally acknowledged as characteristic of the breed as produced by the best breeders of Vermont; not to undertake this in such haste as to create a large, long-legged, gaunt, imperfect-shaped sheep, neither profitable to grow wool or produce mutton. They are not satisfied with rams or ewes that yield less than 10 per cent of wool to gross carcass, nor do they believe that such sheep are more hardy or as profitable as Merinos that have good average size, hardy constitution, and capable of producing 15 to 20—and in many cases larger—percentages of wool, and that will produce wethers weighing, in marketable condition, 100 pounds or over, that sell in our chief markets at as high prices as any. This the breeders of Vermont Merinos believe they are capable of doing.*

The extent of the Vermont Merino industry of breeding and handling pure-bred sheep for fifteen years past may be judged from the fact that in that time the Vermont Merino Sheep-Breeders' Association have registered over 250,000 sheep, probably not less than 300,000, or an average of over 17,000 yearly. Some of these were in other States, but over seven-tenths were from Vermont alone. All were Vermont Merino sheep.

The future of the industry can not be predicted, but it seems promising to those who give close attention to breeding and are liberal keepers. The Australian and other foreign appreciation of them seems to be on the increase, and there is a home demand for good sheep at higher prices than for some years past.

There is a lesson to be learned in the experience of a Vermont breeder of a pedigreed Merino sheep. The foundation is a good ewe of sound constitution and a ram with the same requisites and undoubted purity of blood. Taken a ewe in good condition and with lamb, she is fed all

*Register of the Vermont Merino Sheep Breeders' Association, Vol. IV, 1892.

the hay she will eat three times a day. Clover hay is preferred. Should the hay be coarse they are not required to eat all, but permitted to select the dainty bits. The hay should be cut early, and, if clover, after one-third of the blossoms have turned brown. Timothy should be cut before it has passed into full bloom. Early cut and well-cured hay is of prime necessity. To the hay is usually added one gill of oats, or peas and oats, and a like quantity of bran, mixed, to each sheep per day, after they come to the barn and are fed hay in the fall and early winter. During the whole period of her pregnancy the ewe is kept in a thrifty condition, unless she is too fleshy, which is more likely to be the case with young ewes than with old ones. They are permitted to gain very slowly until their lambs are dropped. When necessary to get them in good condition grain is given to put them in better flesh before lambing time. This is done very carefully and gradually, and the best breeders see that this improvement begins early in the period when the lamb is being carried.

When the lambs are dropped the ewes are fed liberally until they go to pasture. This is necessary to give the lambs a good start, so essential to them in reaching the largest size and most perfect development, for if they do not have plenty of milk nothing can properly replace it. It is preferred to have the ewes all drop their lambs, part with their fleeces and the lambs docked, before the ewes are permitted to pasture; therefore April is considered the best month in which the lambs should be dropped. A month earlier would be much more expensive, as the ewes would require higher feed that month to prevent a decrease in the milk. Experience shows that lambs dropped in April usually are larger at one year than those dropped earlier, and that a ewe turned on grass within a few weeks after dropping the lamb is more likely to increase her yield of milk than one which has been giving milk for a much longer period.

From five to ten days before the first lambs of the flock are dropped there is added to the feed of all the ewes a small allowance of oil cake and a gradual increase of other feed. Until six to ten days after the first lamb of the flock is dropped the ewes are given one to two pints each day of a mixture of three parts oats, three of bran, and one of oil meal, fed twice daily and continued for fifteen to twenty days, at which time nearly all the ewes have lambed, the ewes being turned out daily, weather permitting, to pasture gradually and the feeding diminished in proportion as the pasture is increased. While this gradual reduction of feed is taking place with the ewes, the lambs are being prepared to be turned out by labeling and docking them. They are usually docked when about ten days old. A dry clear day should be selected, not too cold nor damp and cloudy, for the weather has a great effect upon the amount of blood lost, and this matter needs close attention. Some breeders castrate the young rams at the same time that they are docked, but this practice is less followed now than formerly, and they are usually cas-

trated if at all about a week after docking. After docking and castrating the lambs and shearing the ewes they are permitted to run on pasture. If the ewes are provided with good warm barns and sheds they are usually sheared before the lambs are dropped. That veteran breeder and careful observer, Albert Chapman, says:

> The advantages of early shearing are that the fleece starts more readily, and will attain a growth that will be sufficient to protect the sheep from the hot sun in the summer, and the cold storms of fall and early winter. The new fleece starts out and grows very rapidly on sheep shorn very early, continuing to grow well all summer; while if not shorn until late the fleece appears to start very slowly, and makes little progress until fall. While with a heavy fleece on after warm weather comes in the spring there is a very little growth, therefore, but little gain in the amount of wool, although there may be more in amount of oil at the expense of the strength and vitality of the sheep.

The ewes and lambs require but little attention after being turned out on grass, but are usually housed every night of rain and permitted to lie out only when the nights are pleasant. Three quarts of salt are given weekly to about 100 sheep. When the lambs are four months old they are weaned and taught to eat a mixture of oats, bran, and oil-meal. This regimen is continued even after they are again turned into the pasture, particularly should the grass be scant and parched. Lambs and yearlings are fed more liberally than are the breeding ewes the first winter, to keep them growing well, but they are not forced into too early maturity or extraordinary size the first year.

The heaviest-fleeced flocks are sheltered in summer as well as winter from rain, and particularly from frost or hail, and thus all their natural yolk is retained. Even in the best of summer weather many of the flocks are not permitted to lie out should showers threaten. Rain and even dew to some degree wash and rinse out the oil. The object is to preserve that dark coating which is so much sought for and prized, and because it adds to the fleece.

The age at which the ewes are put to breed varies according to the ideas of the breeder. Some commence when the ewe is two years old, others when she is three. The Merino ewe can produce when she is about one-half the period of her growth. As grown by most breeders, she will, if not put to breeding, nearly or quite reach her growth when three years old. This, however, is not always the case. The reasons in favor of breeding ewes at two years of age are, first, a crop of lambs one year earlier than if full maturity was waited for, and, second, a more certain and continuous breeder. The fact has been well established to the satisfaction of most Merino breeders that an ewe put to breeding when two years old will make a more certain continuous breeder than if kept one year longer. There is analogy found in the human race in this respect, early marriages producing a more natural and healthy reproduction, with a stronger and better physical development both in the mother and child than in cases where the marriage has been delayed until a much later period of life. A ewe that has a lamb

at two years of age, and again at three, will not complete its growth as soon as the ewe that is left without lambing until three years old, but in the end the former will have the best physical development, a longer life, a larger number of lambs to show for it, and a consequent larger profit to its owner.

The utmost care is exercised in the choice of a ram. Above all, like the ewe, he ought to have a strong, vigorous constitution, with such peculiar or characteristic points as the breeder wishes to reproduce in his offspring. Pedigree is absolutely required, for this means, in the progeny, that uniformity of type not otherwise to be expected, the greater number of ancestors possessing special points of excellence being a strong guaranty that these points will be reproduced and continued. And this fixity of type is what gives value to the long bred or thoroughbred Merino. Their breeding in line for so many years makes their family blood so strong that it perpetuates whatever characteristic there is in it. But in addition to the pedigree the ram must have individual merit, for it would be a great want of judgment to breed from an inferior animal merely because it had a good pedigree.

The offspring of a good ram and a good flock of ewes will vary in many particulars; some will show an improvement in one particular and some in another. Every variation that is an improvement is taken advantage of by the skillful breeder and sought to be perpetuated and made permanent, not only in a few individuals, but in the entire flock. Herein lies the progress that has been made in the Vermont Merino. When a gain was made of a few pounds, or even a few ounces in the fleece one year, that gain was sought to be made permanent and increased in the descendants, and the success has been so marked that the Vermont breeder looks to the not distant day when a 50-pound fleece may be shown.

In selecting for breeding great care is exercised not only as regards the pedigree and constitution of the sheep, but as to its form, its fleece, and other points. Variation itself in selection, and those sheep which have increased in merit over their ancestors, are chosen to perpetuate and continue the flock while those that are inferior are discarded. If the breeder desires to breed a wrinkly sheep he will select with that view the most wrinkly sheep; if with a view to length of staple, those that show that improvement, and if for size and form of the animal he will select the heaviest of the flock, acting on the principle that like begets like. And it sometimes happens that while carrying these selections to an undue extreme other valuable points are overlooked and sacrificed. The conservative plan is to weed out the poor sheep and keep all the best.

In former years, when the full-blood and thoroughbred Merinos were few in number, it was necessary to use rams on their own progeny, and very close in-and-in breeding was the rule. But at the present day, when there are so many flocks and so many different families and strains

to breed from and to select from, the necessity for close breeding no longer exists. If long continued, close in-breeding has a tendency to induce weak constitution and sterility. Some of the Vermont flocks have been bred very closely in order to fix or continue extraordinary excellence, and have preserved the strength, constitution, and reproducing powers of the best known flocks of the State in those respects.

With great attention to all essential points, great skill in handling and an abiding faith in the type he is raising, the Vermont breeder has produced a sheep differing widely from its imported ancestors of eighty years ago. He has produced a sheep of uniform type and quality that can be maintained for an indefinite time and improved. Nature has given man a helping hand in this improvement. She has given him the pure invigorating mountain air and soil and grasses which have impressed certain characteristics and qualities of the sheep breed there, which are lost when the sheep are taken elsewhere. In most wool-growing sections of the West and South the tendency is to grow coarser, thinner, and lighter fleeces, due in great measure to the grasses upon which the sheep feed. This tendency calls for a renewal of blood, producing heavier fleeced animals, and Vermont fills the demand. And yet that demand is limited and more and more circumscribed to Addison County. Sheep-raisers appreciate this fact and another fact, that the West competes with them in breeding the Merino, even for the Australian market, and the disposition to breed the Merino more for mutton increases. They believe success is open to them in this line if they select breeding sheep from the less wrinkly animals, taking especial pains that they are long of staple, broad on the shoulders and back, and take on fat readily. But they do not advocate a cross with other or coarse breeds. They believe in the Merino with its fine wool of a longer staple, and that the mutton type of the Merino is the demand of the day. This type is as pure in blood and possesses all the valuable characteristics of the true Merino.

The mutton modification, however, is not generally popular with the old breeders of Vermont. But some of them, recognizing the demands of the day, will give their opinion as to how to breed a mutton Merino sheep. This can be accomplished, say they, by selecting well formed ewes that weigh 80 to 100 pounds per head, according to flesh, and rams of good form that weigh from 140 to 180 pounds, in good flesh, and that shear from 20 to 30 pounds per head. The sheep and lambs require good, liberal keeping the year round.

By following these directions, wethers can be produced that will weigh, when two years old, in good flesh, from 100 to 120 pounds, and from 10 to 15 pounds more at three years old. They will also produce a fleece far more valuable than that of any of the coarse-wooled breeds of sheep. This class of sheep is hardy, and does not consume as much food as the same number of coarse-wooled sheep. They will bring top prices by the pound in the Eastern markets, and stand shipment better than the long-wooled breeds, as they are more docile and more easily managed.

Two hundred-pound Spanish Merino rams are not very plentiful, but the writer just quoted, Mr. C. R. Jones, says that he has owned hundreds of them that weighed from 140 to 180 pounds per head, and that sheared from 20 to 30 pounds per head.

While the peculiar sheep husbandry of Vermont is that of breeding fine-wooled Merinos, sheep for mutton play an important part in her economy, though not to the extent that they should. Some choice mutton sheep and early lambs are raised, and the business is remunerative. There are some parts of Vermont where the Merino can not be profitably raised, but where the mutton sheep can, and here are kept the Southdown, the Cotswold, the Hampshiredown, the Shropshiredown, and their grades. The Southdown was once a very popular cross, and then came the Leicester and the Cotswold. In 1869 the Cotswold cross on the common sheep was very successful and popular, and Cotswold rams were crossed on common Merino ewes. As early as 1870 one of the most profitable products of some of the farms was early lambs. For a season of five or six weeks the demand was lively and the farmer could sell to the butcher all he could raise. Good lambs sold for $4.50 to $5 per head at four months old, at which age they were the most profitable. The low price of wool in recent years has given an impetus to the mutton side of sheep-raising, and the English blood has increased in the State until now it is represented in more than one-half of the sheep. The Southdown cross is predominant, but there are many Hampshires and Shropshires, and their numbers are increasing. The first cross between a Southdown ram and a Merino ewe makes a good mutton lamb, but they are not good to breed from.

The profit of sheep raising is given in the case of a farmer's experience in 1890 with 100 ewes, weighing each 100 pounds, shearing 6 pounds of washed, or 8 pounds of unwashed wool per head. The estimated value of the ewes was $4 each. They consumed 20 tons of hay and 100 bushels of oats. Supposing them to rear 90 lambs the flock required 75 acres of pasturage.

Receipts.

600 pounds washed wool, 35 cents per pound	$210.00
90 lambs, $3.50 per head at weaning time	315.00
Total	525.00

Expenses.

20 tons of hay, $8 per ton	$160.00
100 bushels of oats, 40 cents	40.00
75 acres of pasturage, $1.25	93.75
Interest on value of flock	24.00
Total	317.75

This shows a net receipt for the flock of $207.25, an average per sheep of $2.07. By feeding more grain the yield of wool could have been increased to 7 pounds each, and by having the lambs dropped in January, and by an additional outlay of grain and labor, they would sell in New York, by May 1, at $10 to $12 per head.

The profits are not confined to spring lambs. A case is cited where a farmer had a flock of 75 wethers, three years old, for which he had several times refused an offer of four cents a pound, live weight. These sheep averaged 115 pounds. Their wool yielded an annual income of $2 per head for three years. Had they been sold in December, 1889, the owner would have had, as gross receipts, $10.60 per head. Deduct $7.60 for cost of keeping, a liberal estimate, and there still remains a balance of $3 on the right side, beside the great advantage of marketing all the hay and grain on the farm, and the possession of an excellent manure to increase its fertility.

Sheep and wool in Vermont, 1840 to 1890.

Year.	No. of sheep.	Wool.	Average weight of wool, per head.
		Pounds.	*Pounds.*
1840	1,681,819	3,699,235	2.20
1850	1,014,122	3,400,717	3.35
1860	752,201	3,118,960	4.14
1870	580,347	3,102,127	5.34
1880	439,870	2,551,113	5.80
1890	362,112	2,208,896	6.10

From January 1, 1890, to January 1, 1892, there has been a decline in the number of sheep of about 4,000, for which full compensation has been made by the improvement noted in the quality.

NEW HAMPSHIRE.

The valley of the Connecticut River and its inclosing hills and mountains pastured many fine sheep, and of these New Hampshire had its share. The Merino had there an early introduction, and near the Vermont line William Jarvis gathered and wintered his flock in 1810–'11. But earlier than this Dr. Parkhurst, of Lebanon, had Humphreys sheep, presumably half or three-quarter bloods. William Jarvis sold some of his sheep to parties in the State, and among the early breeders was his namesake, Leonard Jarvis, of Claremont, who had a noted flock which he kept for many years and which numbered from 1,000 to 2,500 head. He commenced growing fine wool with a considerable number of the Paular, Escurial, Negretti, Aguirres, and Montarcos. Each variety was kept by itself, but after a few years the Negretti, Aguirres, and Montarcos were discarded in favor of the Paular and Escurial. These two flocks, then considered as the best stock in Spain, were kept entirely separate, pure, and unmixed from 1810 for thirty years. At

the same time by crossing the two flocks a third was produced combining the properties of both flocks, but occasionally showing the characteristics of one of them. The origin of this flock was the William Jarvis importations of 1810, and it held its own until the interest of the Spanish Merino revived and eclipsed the Saxon, by which, for a time, it seemed doomed. Mr. Jarvis sold many rams and ewes from his flock or flocks which went to the improvement of the stock in New Hampshire and eastern Vermont. In 1813 he sold an Escurial ram and 10 young ewes of the Paular and Negretti breed and many rams of the Paular breed. The following is a description of his flock or flocks in 1833:

(1) Saxon mixed with Merino; fleeces extremely soft and fine, averaging about 2½ pounds, staple generally very short; they are not so hardy as the full-blooded Merino, and consequently increase more slowly.

(2) Unmixed Merino of the Escurial or Royal Spanish stock. These are very little inferior in fineness to the Saxon; staple somewhat longer and more elastic, fleeces rather heavier; these are more hardy and productive than the Saxon Merino.

(3) Unmixed Merino of the Paular stock. These have still heavier fleeces; not so fine or soft as the Escurial; they are compact in form, constitutionally most hardy of the Merinos and by far the most prolific.

(4) Full-blooded Merino stock, the result of previous intercourse of Escurial and Paular bucks and ewes, and consequently uniting their qualities of form and fleece, but occasionally exhibiting the peculiar characteristics of the Paular and Escurial only.

Ebenezer Brown was also the proprietor of some rams of the William Jarvis importations of 1810, and in 1811 advertised half-blood lambs.

Messrs. Grant and Jennison, of Walpole, bred from the Jarvis sheep until 1830, when they disposed of their flock to W. R. Sanford, of Vermont, and began the foundation of a Saxon flock, which they maintained for many years in great purity. The sale to Sanford was the means of starting afresh the cultivation of the pure-bred Spanish Merino in Vermont, most of the flocks having been crossed with the Saxon.

In 1810 or 1811, either by direct importation or purchase at Boston, R. R. Livingston secured some Guadaloupe sheep. Some of these he sold to Elisha Ticknor, of Boston, who bargained with the Shakers at Enfield to keep them five years. Mr. Williams, of Hanover, near Enfield, was employed by Mr. Ticknor to superintend his affairs in that section and see that these sheep were kept pure. These sheep were handsomely formed, of large size, hardy, and possessing great strength, yielding heavy fleeces of fine clean wool. The flock eventually fell into the hands of the Shakers, who maintained it pure, and from the wool manufactured fine cloths for many years. From time to time sales were made of rams and ewes to parties in Vermont and New Hampshire, but the flock was kept whole until 1844. In June of that year Merrill and A. L. Bingham purchased 103 and took them to Vermont. Satisfied from the yield of wool that they would prove a profitable sheep, in September following the Binghams went to Enfield and

bought the remainder of the flock—12 rams and 58 ewes. The Shakers at Lebanon had fine flocks which they maintained for many years, and by which they made much reputation and profit from the purity of the blood and the fineness of the wool. A Guadaloupe flock was bred pure by J. N. Sawyer, of Salisbury, as late as 1848, when 25 rams and 100 ewes were sold from it to H. K. Fritz, of Jackson, Mich. In 1854 Mr. Sawyer crossed his flock with the French Merino, and the average yield of wool was increased to 5 pounds each.

By 1835 the raising of wool was fast becoming the business of New Hampshire landowners, to which their productive meadows and fine pasturage on the hillsides contributed. Mr. Jennison, of Walpole, had 370 sheep. Fifty-four of these were pure Saxony ewes, the others mixed Saxony and Spanish. Of the 54 Saxony ewes, 4 were barren; from the remaining he raised 48 lambs. The average yield of his Saxony sheep was $2\frac{3}{16}$ pounds of wool and his lambs brought him $15, for which the demand exceeded his supply. A Mr. Hodskin, of Walpole, had 800 sheep. From 200 Saxon ewes he raised 183 lambs; his experience was 200 lambs from 225 sheep. The wool of the Saxons averaged $2\frac{7}{16}$ pounds per sheep. He gave them salt twice a week and 100 sheep required 10 tons of hay to carry them through the winter. In 1835, Luther E. Stevens, of Claremont, sheared 1,130 pounds of wool from 301 sheep, mostly Spanish Merinos. One fleece from a three-year-old Spanish Merino ram, when washed and tagged ready for market, weighed 9 pounds 12 ounces, the heaviest fleece then known in the country.

An experiment showing the hardiness of the Merino cross on the common sheep of New Hampshire is of interest. A farmer wintered a a flock of 75 by browsing and a gill of corn a day to each. Snow was on the ground most of the time; they were not in the barn all winter and came out well in the spring. Their good condition was attributed to plenty of exercise in the fresh air and the green food they secured by browsing in the fields and woods.

The fluctuations in the price of wool, the depredations of dogs and other causes were unfavorable to the maintenance of pure bloods and fine-wooled flocks, and by 1850 there were very few pure in the State, most of the sheep being crosses of the Spanish and Saxon Merinos with the common sheep and yielding $2\frac{1}{2}$ to 3 pounds of wool. The industry revived from 1851 and more wool was grown and more attention paid to sheep. By 1854 there was a medley of all kinds and all grades. There were goodly numbers of Saxons and Spanish Merinos and their grades in the hills and on the rough lands, but where pasturage was good the native, the Irish, the Southdown, Leicester, and Cotswold were found more profitable, and wherever it could be done the raising of mutton was substituted for the growing of wool.

In 1840 the Merino fleeces of New Hampshire averaged 2 pounds 6 ounces; in 1849, 3 pounds; in 1856, 4 pounds; and in 1862, 4 pounds 11 ounces.

In 1861 almost the entire sheep of the State were of the Merino grades, the raising of mutton sheep being confined to good pasturage land, of which there was but little, and the growing of wool revived. Many Atwood rams were purchased in Vermont and driven into the State, and the yield of wool rapidly increased.

There were some portions of the State where, despite fluctuations in price, wool growing was always a profitable branch of farming. Those who persevered made money, realizing much greater profits from sheep husbandry than they could have done from any other kind of farming, and by careful selection of rams and breeding ewes the weight of fleece was doubled, the animal increased in size, and the wool improved in quality. These cases were exceptional, and in 1866 wool growing rapidly declined, the number of sheep falling from 310,534 in 1860 to 248,760 in 1870. In 1865 the number was estimated at 677,571. In 1871 a large number of the best flocks in the State had become extinct, and in 1880 the sheep of all kinds had fallen to 211,825, yielding 1,060,589 pounds of wool, an average of 5 pounds per head.

Near the Vermont line the Vermont style of breeding is carried on, but in the Merrimack valley, with the drier plains and rocky ridges on either side, a different course is pursued. Here during the period from 1861 to 1866 were bred such flocks as are now found in Merrimack County, sheep of fair size, good form, and without wrinkles, such a sheep as Mr. Abram Melvin, of Weare, bred through a lifetime without any perceptible admixture of the wrinkly Vermont Merinos. At the present time several breeders in Merrimack County are making efforts to preserve this type of sheep, as those who continue to breed Merinos here are aiming for a Delaine Merino with mutton qualities. There has been Delaine blood lately introduced to the adjoining town of Warner from both Pennsylvania and Maine. H. F. Pearson, of Webster, has made a successful cross on the Melvin sheep by the use of a Dickinson Merino ram purchased of H. G. McDowell, Canton, Ohio.*

The Melvin flock here mentioned was bred for more than sixty-five years, and was founded on Jarvis sheep. They were derived from the first importations bred a few years near Boston by a Captain Perry, and from this flock Phineas C. Butterfield procured sheep, took them into New Hampshire, and established a flock there; and from him Abram Melvin procured the foundation of his flock. When Mr. Melvin found a sheep to suit him he bought it, no matter what the price, and put it in the flock, rejecting every shearing season all that were for any cause unsatisfactory. His sheep were of dark color, long, fine wool, heavy shearers, free from wrinkles, and of good size.

* New Hampshire Agriculture, 1887.

Sheep and wool in New Hampshire, 1840 to 1890.

Year.	No. of sheep.	Wool.	Average weight of wool per head.
		Pounds.	*Pounds.*
1840	617,300	1,260,517	2.04
1850	384,756	1,108,476	2.88
1860	310,534	1,160,222	3.73
1870	248,760	1,129,442	4.54
1880	211,825	1,060,589	5.00
1890	192,824	1,124,163	5.83

Of the 192,824 sheep, as estimated in the State in 1890, 20 per cent are the common or native sheep and crosses on them, and 20 per cent Merinos of various grades. Sixty per cent are sheep of English blood, and this stock is rapidly increasing at the expense of the common and Merino grades. The common sheep is being improved, the Merino grades are disappearing. But few full-blood Merinos remain in the State, these are of great excellence and are well and carefully bred. The flocks of heavy sheep kept in northern New Hampshire—and the same may be said of those in northern Vermont—usually are not pure bred, but have a mixture of Leicester and Cheviot blood, and are oftener kept in flocks of from 12 to 20 than in excess of these numbers. The returns for January, 1892, show a decrease of over 4,000 since 1890, and an improvement in condition and quality.

MAINE.

There were but few Merino sheep imported directly into Maine ports, and of these mention has been made elsewhere. Little was done in regard to raising sheep in the State, except a few of the common breeds, kept by some farmers for mutton and to supply wool for the household manufacture, until the war of 1812. As early as 1813 a few farmers in Winthrop, among whom were S. and E. Wood, Mr. Pullon, and Dr. Snell, met to discuss the question of the introduction of the Merino, and after deciding that the climate might suit and that the venture would be profitable concluded to try the experiment, and made a purchase of 40 lambs of William Jarvis at $12.50 per head. The next purchase was made in 1814 of 40 more lambs of Mr. Jarvis, at $25 per head, and again in 1815 the same number, at $50 per head. The cold but dry and bracing, air of the winter was found very congenial to the Merinos, and they did well. No more purchases were made by the Winthrop men, but between 1812 and 1815 the sheep were extensively introduced by others.

The reverses of 1815 having put an end to the profits on wool, many who had formed flocks and others who were commencing to do so sold them to the butchers and relinquished the business. A few, however, knowing the intrinsic value of the animal, persisted in breeding them, and many fine flocks were subsequently found in the State. Governor

Kent had a flock, of which it was said in 1828 that he "sheared successfully from the same flock of Merinos. The wool improved progressively, that of the last year comparing favorably with Saxon. He selected each year after shearing the best formed and finest wooled rams and preserved them to run with the flock." Notwithstanding a majority of the people were more directly engaged in shipping and industries connected therewith, and that manufactures demanding wool received but little encouragement from the leading men, there were many sheep of the Merino blood in the State in 1830. At that time there were native breeds, over 6 months old, 275,452; Merino or mixed breeds, over 6 months old, 91,524, or a total of 466,976 sheep, producing an estimated clip of 1,400,000 pounds of wool. This was thought by some to be too low a figure, that the Merino and mixed breed were in larger proportion to the whole number, and that the clip exceeded 1,500,000 pounds. The cost of keeping sheep at that time was $1.25 per head yearly.

The open and rainy winters of 1829-'30-'31 were very disastrous to the Merinos, and many of the best flocks in the State suffered so badly that the farmers gave them up. Some were disposed of to the butchers, while others were allowed to run with the common sheep and deteriorate.

The first Merinos in Maine were Paulars, though some others were occasionally found. They were much better than many found in 1845. The deterioration from 1812 to 1845 was caused by want of attention in breeding and the unfortunate cross with the Saxons from 1826 to 1840. Many farmers, however, steadily kept to the Spanish Merino. The average fleece in 1845 was 3 pounds, but some flocks came up to 4 pounds; these, however, were not very plenty.

Maine did not escape the Saxony infatuation. These sheep were first introduced into the State by Judge W. A. Hayes, of York county, and they were generally crossed upon the Spanish Merino. By this mixture the fleece became finer but it diminished in weight and the cross became less hardy. On account of this enfeeblement many farmers began to raise other breeds which were more hardy and better fitted for the production of mutton and coarser wool, and took advantage of the English breeds then coming into the State. In 1828 the Leicesters were brought into the State by Dr. E. Holmes, from the flock of Stephen Williams, of Northboro, Mass.; the first Southdowns by Charles Vaughan in 1834, and the first Cotswolds by Dr. Holmes in 1844, from the flock of Corning & Sotham, Albany, N. Y. In 1842 many gentlemen of Kennebec County introduced Vermont Merinos from the flock of S. W. Jewett, and crossed them with their own grade Merino and common flocks, followed shortly after by the French Merino and the Silesian, and this county long retained some excellent fine wooled sheep, although fluctuations in prices were not encouraging to the growth of wool. A cross between the Southdown

and the Merino, about 1842, produced a useful and serviceable sheep, better adapted to the farmer who sheared and wove his own fleece, than the pure Merino, and it became very popular. Washington County at one time had some fine flocks mixed Spanish and Saxon Merino, but by 1850 wool-growing for profit was practically abandoned. The farmers kept about as many sheep as sufficed the family wants, and those of a mixed kind, giving a 3-pound fleece. Waldo County went through the same experience and where, formerly, large numbers of Spanish Merinos and Saxonies were kept, by 1850 coarser wooled sheep had supplanted them. Somerset County was formerly the greatest fine-wool growing county in the State. W. R. Flint began a Spanish Merino flock in 1820, and after an experience of more than thirty years was convinced that the Merino would grow more wool from the same weight of carcass, would eat a greater variety of food, and would produce wool as cheap per pound as any of the coarser breeds. They required more attention through the five months of winter than the coarser native, but the compensation for the extra care was more than obtained by the less amount of food consumed by them in producing the same quantity of wool. The flocks of the county, young and old together, averaged 3¼ pounds of wool per head, and instances of shearing 8 or 10 pounds from a sheep were not uncommon. A ton of hay would winter sheep enough for a clip of 17 pounds. Wool-growing was considered profitable when the wool could be sold at 33 to 35 cents, but the fluctuations in price rendered the business a precarious one and deterred many from pursuing it, who preferred the less hazardous and less expensive system of raising coarse wool and mutton and lambs for market. And this was better adapted to a careless system of husbandry which, unfortunately, was too common everywhere. When fine wool ceased to pay many farmers bred their Merino ewes to long-wooled rams, principally Leicester, and from crosses of these on the common sheep some good mutton sheep were produced. A flock of considerable note and profit was built up in this manner. From a half-blood Leicester and Merino ewe and a polled half-blood ram, of moderate size and neat form, a breeder produced a ram which was then used on his whole flock. This brought the produce to one-eighth Leicester and seven-eighths Merino. On this basis the sheep were bred for several years and a great uniformity was attained, and they were a pretty and useful sheep in reference to the kind of wool wanted, with considerable more fattening tendency than the pure Merinos. Crosses of this kind both with the Saxony and Spanish Merino, and also crosses of the Merinos on the native sheep, produced a middling-sized sheep and a good grade wool.

Aroostook County had no pure breeds, but considerable attention was paid to raising sheep both for wool and mutton. The wool was used largely in domestic manufacture, the surplus commanding good prices in the manufacturing towns, while fat sheep and lambs from

this county were popular among mutton-eating people. An essential service was rendered this county and Penobscot by the importation made into the British province of New Brunswick of the pure Leicester sheep. Charles Perly, of Woodstock, made these importations and the sheep became known as the Perly breed. They were large, coarse-wooled sheep and were well adapted to the country, though there was an objection to the full-bloods, as their wool grew 8 to 10 inches long, and, parting on the back, exposed the animal to storms. Some rams clipped 17 pounds. The various grades of this sheep were driven by hundreds yearly into Aroostook and Penobscot, and thence into other parts of the State, and when crossed with the common sheep and Merino grades were considered very valuable for hardiness, large quantity of mutton, and heavy fleece. They were the favorite mutton sheep for the Bangor market.

Sheep increased in Maine from 466,976 in 1830 to 649,274 in 1840, and decreased to 451,577 in 1850. In 1860 the number was 452,472, or an increase of but 895 in ten years. The average yield per head of wool was 2.25 pounds in 1840, 3 pounds in 1850, and 3.30 pounds in 1860.

Notwithstanding the great decline in fine-wool growing in the Eastern States, from 1835 to 1860, Maine preserved some of her fine flocks and at a shearing in 1867 made this showing as to weight of fleece and length of staple: Nine full-blood Merino rams, three grade Merino rams, and three full-blood Merino ewes were weighed and shorn. The average live weight of the nine rams was 126⅝ pounds, the heaviest being 149 pounds, the lightest 99 pounds. The average weight of the fleece was 15⅝ pounds, the heaviest being 20 pounds 8 ounces, the lightest 10 pounds 10 ounces. The staple ran from 2¼ to 3 inches, the average being 2.71 inches. Three grade Merino rams, whose average weights were 108 pounds, gave an average of 13⅛ pounds of wool each, of 2.66-inch staple. Three full-blood Merino ewes, averaging 68 pounds each, the lowest 51 and the highest 82½, gave an average each of 8 pounds 14 ounces of wool 2¼ inches long. The average age of the rams was three years and a half, that of the ewes two years and two months.

The war of the rebellion caused a great increase in sheep-raising from 1862 to 1865, the Spanish Merino taking the lead. Many Merino rams were purchased in Vermont and crossed on the many mixed breeds of the State, the Saxon and Spanish Merino grades, the Leicester, the Southdown, the Cotswold, and the old native, and in 1864 there were more sheep than at any other period since 1840, the number exceeding one million. The decline from 1865 to 1870 was from 1,041,724 to 434,666, or a loss, 607,058 in five years. But the improvement from 1840 to 1870 had been so great that the 434,666 sheep of 1870 produced more than 300,000 pounds of wool in excess of the amount produced by 649,264 sheep in 1840. In 1840 it took 40 sheep to produce 100 pounds of wool; in 1870 25 sheep would produce the same amount. There was a revival in the industry from 1870 to 1880, and

some improvement was made, particularly in the Merino flocks, and the secretary of the Maine board of agriculture reported, in 1875, that there were several good flocks in Somerset County, and of fifteen of these, where the average number of sheep in the flock was 147, the average weight of the fleece was 6.16 pounds for all ages and both sexes of Spanish Merino and high grades. The census of 1880 returned 116,910 sheep in this county, nearly double the number of any other county in the State and a little more than one-fifth of the whole number in the State. These sheep were almost wholly Merinos and their grades, but there were thoroughbreds of improved English sheep also. There were also full-blooded Southdowns, Oxfordshires, Hampshires, Cotswolds, and Shropshires in the State in large numbers, and crossbreds were consequently widely introduced. These made excellent mutton, and of the 626,608 sheep sold in the Boston market in 1882, Maine supplied 36,656.

A great impetus was given to the raising of sheep in Aroostook for the Bangor and Boston markets by the erection of immense slaughtering establishments at Houlton in 1883. Previous to this time a large business had been done by persons in buying up sheep and lambs and shipping them to Boston; but the fame of Aroostook mutton in that market, and the shrinkage that ensued from shipping alive, caused Messrs. Swift & Maxfield to take possession of that market, as they had done of the beef market of Chicago. They filled ice-houses in 1882–'83, erected a slaughterhouse of large capacity in the summer of 1883, and purchased fifteen refrigerator cars built expressly for the business. The fall of 1883 this business was put in operation, and 600 sheep and lambs were daily dressed for the Boston market. After being kept thirty-six hours in ice closets they are forwarded by refrigerator cars to their destination. Over 30,000 sheep and lambs were thus consumed in the fall of 1883, and later in the season fat wethers were slaughtered for the export trade.*

The Maine coast has many islands, most of them well adapted to the grazing or keeping of sheep throughout the year, with no shelter but such as is afforded by the low evergreens growing upon the islands, and without feeding them during the winter from stored forage. There are many instances of successful sheep farming on these islands, two of which can be noted. In 1874 Mr. Gilbert Longfellow, of Machias, furnished the publishers of the Bulletin of the National Association of Wool Manufacturers a leaf from his experience. Mr. Longfellow owned an island of 1,400 acres, situated in Englishman's Bay, south of the town of Jonesboro. This island has upon it several hundred acres of the very best tillage land and about 200 acres of grass pasture. Half of the island was heavily wooded with spruce, fir, birch, maple, etc. It opens on the east to the full ocean, which rolled in upon it

*The Climate, Soil, Physical Resources, and Agricultural Capabilities of Maine. Samuel L. Boardman.

thousands of cords of seaweed. The seasons are much milder than on the mainland. Upon this island Mr. Longfellow had a flock of about 275 sheep, which he had purchased in 1869 of a former occupant. They were of a mixed class and showed traces of the Merino and South-down, with some of the coarse, long-wooled breeds. These sheep ran on the island summer and winter, being divided into flocks of about 25 to 30 each, and kept in an inclosure where they could get to the shore for seaweeds and into the woods for shelter. Their living in winter was chiefly on some varieties of seaweed, principally on what is known as "dulse." In the spring, when the tides run out very low, they were in the habit of going out on the rocks and ledges as far as they could get, to feed on the lichens and dainty bits of sea growth. They ate also the branches of nearly all the trees that grew on the island. Other details, and the mode of winter keeping, are given in Mr. Longfellow's words:

> They are nearly as wild as deer. My sheep now commence lambing in March and get through by the 1st of May. I find these early lambs are hardier than late ones. They will stand a snowstorm better than a cold rain, and by coming early the lambs are better able to stand the winter, and the ewes wean the lambs time enough to get recruited before cold weather. Few sheep are lost by disease. As I go about the island, I find nearly all the bushes with the ends of the branches bitten off. They like fir better than spruce; are very fond of mountain ash, eating branches as large as your finger; and also bark elder is a favorite food, and raspberry; also the moss from old stumps and logs. I had a flock in my field this winter. The snow came deep in March, and I used to carry out hay to them, about 50 pounds daily to about 50 sheep. After a while they would come up near the barn for it. Sometimes sheep from the other parts of the island would come up where they were eating, but would take only a few mouthfuls, and then leave it. I have several times taken tegs to the barn that were poor and weak, but they almost always die. It seems to be hard for them to get through the first winter; after that they are all right. The wethers keep fat all winter. The mutton of these island sheep is very superior. It has none of the mutton taste, so many dislike, but resembles venison.

When Mr. Longfellow bought his flock it was "everything mixed." He tried to improve it by buying the largest rams he could find; he had one or two grade Cotswolds, and one long-wool sheep that he thought was a Leicester. He had an idea that the Lincolns were the proper sheep for the island, but did not know but the Cheviot would be better. His success with "barn-raised rams" or those raised on the mainland, was not assuring. The first one he turned out, and the next February took up barely alive; the second year he weathered it till about March. Others did about the same. But sheep born on the island, if they survived the winter, seemed to be all right, which led him to the conclusion that an island or seashore life changes the nature of the animal.

A more recent contribution to the knowledge of sea-island sheep farming is found in the experience of Mr. John P. Wentworth, of East Knox. It is given by Mr. Boardman in his report on the resources of Maine, heretofore noticed. Mr. Wentworth purchased in July, 1882,

an island known as Dyer's Island, which comprises some 900 acres, and is a part of the town of Harrington, Washington County, and is located one and a quarter miles from the steamboat wharf in Millbridge. A large portion of this island is covered with a forest of mixed growth of birch and fir. When the purchase of this island was made Mr. Wentworth also purchased all the sheep, some 200 in number, raised on the island; indeed, sheep had been kept on this island for a period of fifteen years without any artificial food or protection, grazing in the fine pasture in summer and in winter subsisting on the kelp and sea-moss, found in great abundance on the shores, which is very nutritious and of which the sheep are very fond. In April, previous to purchasing the island in June, Mr. Wentworth made a careful inspection of the sheep upon it and found them in much better condition than his own flock at home, which had been cared for and fed with early-cut hay, and the wethers were then good mutton. On visiting the island in January the sheep were found in good condition.

There are many islands on the Maine coast that have sheep; some of them carry sheep that their owners never see, except to catch and shear. They do not increase as rapidly as they do on the mainland on a well-regulated farm, but generally they are free from the worry of dogs. Upon this point Mr. Boardman says: "The advantages of this system of sheep husbandry is apparent in the absence of loss and injury from dogs, which, in the older counties of the State, is one of the great hindrances to profitable sheep husbandry." And again:

> Another consideration is in the fine quality of the mutton, which, devoid of the strong flavor sometimes present in mutton, always commands a high price in market when its fine character is known. With the hundreds of islands on the Maine coast favorably situated for this business, sea-island sheep farming is likely to assume great importance in the future agricultural economy of Maine.

The greater part of the area of Maine is still covered by the virgin forest, and yet there is already needed, on the cleared parts, the renovating virtue of the sheep. The areas of the sea-coast counties are natural sheep ranges, and mutton sheep thrive well there. Yet but few are raised and the fertility of the land is decreasing. This has long been noted, and there are those who believe that the mutton sheep is to be the agricultural savior of Maine. As early as 1875 Samuel Wasson, of East Surry, contributed a paper to the State board of agriculture, in which he said:

> The characteristic features of its surface form, the quality of its soils, the kinds of vegetation, its pure waters and bracing air, are each a special witness to testify that our future farming prosperity is dependent upon the development of a mutton-growing industry. Between sheep and soils there is a reciprocating action; the soils feed the sheep, and the sheep enrich the soils. In the palmy days of our agriculture every farmer had his flock of sheep. Thirty years ago there were, on an average, 17 sheep to each farmer; thirty years later, less than 7. In 1840 there were half as many sheep as improved acres; in 1870, one-fourth as many, or but 1 sheep to every eight acres; whereas, in England, there are as many sheep as acres. The same pro-

portions would give to Maine 2,700,000 sheep, or to each of her 60,000 farmers nearly 40 more than they now have.

Giving the census statistics the credit of making one error offset another, and they show, since 1840, the decrease in the product of wheat to be in exact proportion with the diminution in sheep, showing that there is an intimate relation between the growing of wheat and the keeping of sheep.

Sheep husbandry then was a necessity to Maine, whether it was to raise wool or mutton. For many years the available fertile elements of the farms had gone to market without an equivalent fertilizing return. Every pound of mutton or wool, every bushel of beans or potatoes, every load of hay or straw, had taken away a certain quantity of the phosphates, potash, and nitrogen of the soils, without an adequate return to supply the depletion, until the active element of the soil became so reduced in quantity that satisfactory crops were not grown, or, as commonly expressed, the farm was "run out or worn out."

As in other States so in Maine, sheep husbandry meant wool growing, but wool growing was profitless, and the time had come to change from that to mutton raising, the time to resort to the growing of mutton as one of the staple productions of the State. It is hard to step aside from beaten paths and adopt new ways, but the pecuniary advantage of the mutton sheep was urged. They became a medium whereby the potatoes, barley, turnips, hay, and coarser products could be worked up into a high-priced marketable article, with little risk of prices declining below a paying standard.

There were, however, few farmers and fewer sheep owners in Maine who understood practically the difference between breeds to be kept for wool and breeds to be killed for mutton, or that while "wool growing may be successful in the midst of primitive, almost barbaric, practices in culture, mutton production involves arts of husbandry the most advanced and a knowledge of animal physiology the most enlightened." Which of the mutton breeds were the best adapted to the climate, the botany, and the system of Maine agriculture was not known, for their comparative merits had not been thoroughly tested by skilled observation. Each breed had local characteristics and habits, and no one breed was adapted to a wide range of country. Among the advantages pointed out for mutton raising on the sea-coast was the magazine of wealth in the illimitable quantities of inedible fishes there abounding, in the residuum of the oil establishments, and the cured chum of the porgy and herring factories. This skilled transmutation from fish to flesh would make the entire State a paradise for mutton sheep.

The use of fish and fish-scrap as an article of food for the sheep attracted the attention of the Maine board of agriculture as early as 1864, when that board in turn laid the matter before the farmers of the State generally. For many years it had been the custom of the coast breeders to feed their sheep on fish caught in the nets that were not marketable, and they seemed to thrive upon them. Upon the great increase of the fish-oil industry the utilization of the pomace or refuse

began to be considered, and it was asserted that it was an excellent article of food for sheep, swine, and poultry. In a communication to the board of agriculture, Mr. William D. Dana, of Perry, said:

Fish pomace, or the residuum of herring, after the oil is pressed out, is greedily eaten by sheep, swine, and fowl, and probably porgy chum would be eaten as well. Smoked alewives and frost-fish also furnish a food palatable to cattle. Sheep thrive well, get fat, and yield heavier fleeces when fed on this pomace than when fed on anything else produced in this section of the State. Careful and observing farmers who have fed it assert that it is of equal value with good hay, ton per ton, and that its value for manure is in no degree diminished by passing it through the living mill and thus reducing it to a much more convenient state for applying. If it could be sufficiently dried, without other substances to prevent putrefaction, it would form a valuable article of cattle food in regions from which it is now excluded by the expense of transportation and its own odoriferous nature.

It was thought that if sheep would eat the scrap readily much poor hay or straw could be used to good advantage, thus allowing the farmer to consume all his first-quality hay in keeping other stock. It was also thought that the meat would not taste of the flavor imparted by this food, provided other food was substituted for a reasonable and proper length of time before slaughtering.

There were many discussions on the subject at the meetings of the Maine board of agriculture and articles in the agricultural papers, and many experiments were made with varying degrees of satisfaction. One of the most successful was that of Mr. M. L. Wilder, of Pembroke, who gave the result in a paper communicated to the board of agriculture in 1869:

I keep about 100 sheep and have fed fish offal to them for the last ten years. The offal is made from herring caught in weirs, salted the same as for smoking, cooked, and the oil pressed out, leaving a pomace, for which the sheep are more eager than for grain. For the last three winters I have kept my sheep on thrashed straw, with one-half pound per day to each sheep of dried fish pomace, or 1 pound of green (as it shrinks one-half in drying), and they came out in the spring in much better condition than when fed on good English hay, with corn. I consider the dry pomace worth as much as corn, pound for pound. When I have had enough to give them one-half pound per day, I have found that the weight of the fleeces was increased one-quarter, and not only that, but also the carcass in a like proportion, the weight of the fleeces per head averaging from 5 to 7 pounds.

The conclusion to which Mr. Wilder came was that fish offal was not only cheaper but much superior to any other kind of food he had ever used. Similar statements were made by others.

In 1875 the Maine Agricultural College made an experiment to test the value of this offal as compared with corn, pound for pound. The experiment began January 18, and ten lambs dropped the previous spring were selected. The trial ran over a period of sixteen weeks. When the feeding commenced the pen of five sheep, to be fed on corn, weighed 313 pounds, and the pen of five, to be fed on pomace, weighed 316½ pounds. At the end of the trial the corn-fed pen weighed 361 pounds, a gain of 48 pounds; the pomace-fed pen weighed 364 pounds,

a gain of 47½ pounds. The result of the experiment seemed to indicate that fish pomace was of about the same value as corn, pound for pound. The sheep came out in the spring looking well, but the increase was very light.

The change from wool-growing to mutton-raising in Maine was slow and gradual, but by 1883 40 per cent of the sheep contained English blood, the other 60 per cent being common sheep and the Merino and its grades. At the Maine State Fair of 1888 several fine Merinos were exhibited of all grades from full-blood to the lowest grade. One four-year-old ram was shown which weighed 170 pounds and gave a 26¼-pound fleece. But the Merinos were almost eclipsed by the grand show of improved English breeds that were rapidly supplanting them. There were Oxford Downs and Hampshire Downs, Southdowns weighing 225 pounds, Shropshire Downs weighing 200 pounds, Cotswolds running up to 244 pounds, Leicesters and Dorsets and fat sheep without number.

In 1890 50 per cent of the sheep of the State were of English blood, 25 per cent were Merinos and their grades, and 25 per cent unimproved natives. Thirty per cent of the wool clip was graded above medium, 35 per cent as medium, and 35 per cent below medium. The tendency was still toward mutton-raising and the fine-wool industry was declining.

The following table presents the number of sheep, pounds of wool clipped, and average quantity of wool per head for each sheep for the period from 1840 to 1890:

Year.	No. of sheep.	Wool.	Average weight of wool per head.
		Pounds.	*Pounds.*
1840	649,264	1,465,551	2.25
1850	451,577	1,364,034	3.00
1860	452,472	1,495,060	3.30
1870	434,606	1,774,168	4.00
1880	565,918	2,776,407	4.90
1890	542,248	2,982,364	5.50

The returns of the Department of Agriculture for January 1892, show an increase of over 27,000 sheep since January, 1890, and while there has been a decrease in the Merinos there has been a very decided increase of the English mutton breeds.

The steady decline of sheep husbandry in the New England States for the last fifty years is told by the figures of the census. In 1840 the six States had 3,820,307 sheep; in 1890 they had but 1,220,704, or less than one-third the number of 1840. The decline by States is shown in the following table:

Number of sheep.

States.	1840.	1850.	1860.	1870.	1880.	1890.
Maine	649,264	451,577	452,472	434,666	565,918	542,248
New Hampshire	617,390	384,756	310,534	248,769	211,825	192,824
Vermont	1,681,819	1,014,122	752,201	580,347	439,870	362,112
Massachusetts	378,266	183,651	114,829	78,560	67,979	56,530
Rhode Island	90,146	44,296	32,938	23,938	17,211	20,231
Connecticut	403,462	174,181	117,107	83,884	59,431	46,759
Total New England States	3,820,307	2,257,583	1,779,707	1,450,155	1,362,234	1,220,704

In 1840 over 70 per cent of the nearly 4,000,000 sheep were Spanish and Saxony Merinos and their grades, nearly 30 per cent were unimproved natives, and the improved English breeds constituted less than 1 per cent. In 1890 26 per cent were of Merinos and their grades, 12 per cent were unimproved, and the English mutton breeds constituted 62 per cent. The change from the Merino to the English blood still continues and the unimproved sheep are disappearing.

The progress of improvement in the fleece has been steady and marvelous. In 1840 the average weight of wool per head was 2.21 pounds; in 1890 it was 5.63 pounds, an increase in fifty years of 155 per cent. As much wool was grown on 1,220,704 sheep in 1890 as was grown on 3,126,995 sheep in 1840. The amount of wool for the census year from 1840 to 1890 follows in this table:

Production of wool.

States.	1840.	1850.	1860.	1870.	1880.	1890.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
Maine	1,465,551	1,364,034	1,495,000	1,774,168	2,776,407	2,982,364
New Hampshire	1,260,517	1,108,476	1,160,222	1,129,442	1,060,589	1,124,163
Vermont	3,699,235	3,400,717	3,118,950	3,102,137	2,551,113	2,208,896
Massachusetts	941,906	595,136	377,267	306,659	299,089	276,787
Rhode Island	183,830	129,092	90,699	77,328	65,680	79,610
Connecticut	889,870	497,454	335,896	254,129	230,133	218,831
Total New England States	8,440,909	7,095,509	6,578,094	6,643,863	6,983,011	6,890,651

A great part of Maine and the northern portions of New Hampshire, Vermont, and New York, and the southern shore of Lake Erie, derived their earliest mutton sheep from Canada, and that Dominion has continued to supply improved English breeds to the present day.

The first sheep were taken into Canada by the French in 1665, and subsequent importations were made from France. The descendants of these French sheep are still to be seen in the province of Quebec, a small but hardy race. The greater part of them show signs of the Merino blood that was infused in Quebec flocks from 1816 to 1830, when many of the best Merinos in Vermont and northern New York and even Massachusetts were bought at a very low price and taken across the border. Until the overthrow of the French power in Canada the French families of sheep prevailed and even maintained their growth until the

beginning of the present century, when a few English sheep were introduced, among the first being a small flock of New Leicester sheep brought from England by a Rev. Mr. Toofy, about 1799 or 1800. When the Merinos were introduced into the United States they soon found their way from Vermont and New York into Canada and became very popular. Many flocks were crossed with them and new flocks were started, and for some years fine-wool growing prospered. In the country contiguous to the American boundary nearly all the flocks existing in 1840 were of Merinos and their grades, originally introduced from the Atlantic States. The woolen manufacture was then confined principally to coarse homemade cloths and flannels, then suitable to the needs of a new country. But in the other and by far larger part of the Dominion the sheep were a sort of mongrel type, partaking much of the characteristics of the Cheviot—a rough hardy race, of medium size, the rams generally having horns of a most unwieldy form. There were many black sheep among them, and these were prized above others by the farmers' wives, for their wool could be spun into yarn for making the coarse homemade stockings and clothing without the trouble of dyeing.

About 1844 some of the most progressive farmers began importing Southdowns. As a pure breed they did not prove successful; partly owing to their want of hardiness for that climate, but particularly to the fact that all or nearly all the stock imported came from the same flock or strain of blood and but little or no fresh blood was subsequently introduced. Consequently they were lacking in stamina and constitution for being so closely bred. But when the Southdown rams were crossed upon the native or common sheep and the Merino ewes there were great improvements, so great that after a few crosses the flocks became more than doubled in size of carcass and weight of fleece, with a fine wool. Many laid the foundation of new flocks and improvement in old flocks by buying and using such Southdown rams as were exposed for sale by those who bred them. Some of the early American Southdowns came from this Canadian importation and the animals descended from it.

About 1846 some gentlemen farmers in Wellington imported ewes and rams of the Leicester breed. They were smaller than the Leicesters of the present day, and of compact, handsome form, with but little offal, and with good fleeces of a fine quality. The ewes were remarkably prolific and their lambs grew rapidly, and at four months' old gave a dressed weight of 50 pounds to the carcass. These sheep were quick feeders, matured early, and gave a fine, well-flavored meat, upon a carcass which, dressed at 12 to 18 months' old, averaged 100 to 120 pounds. So great was the improvement made by the Leicesters on the common sheep and on the flocks of short-wooled sheep that they were taken into general favor, and the improvement began by the Southdown was carried still farther by the new rival. From time to

time many of the farmers made fresh importations from the best flocks of England. These coming from breeders at different points, whose stock, though pure, were not closely related, as was the case with the Southdowns, showed less the evils of too close breeding and exhibited a greater degree of hardihood which commended itself to the farmers of a vigorous climate. The Leicester blood thus became generally disseminated through the flocks of the better class of farmers, those who adhered to the pure blood keeping up their flocks either by fresh importations or by exchanging rams with those who had a different strain of the same breed from their own. There was, however, one objection to the pure-bred Leicester, and that was that the fleece was too open and thus let in the rain, and that it was inclined to be coarse and too brittle for combing wool. But this fault was not so apparent in the sheep bred from a cross of Leicester ram upon the then existing flocks of native or grade Merino blood. So powerfully did the Leicester blood work upon these that the sheep of the third cross were nearly equal to the Leicesters as mutton sheep, with the advantage of carrying better fleeces. As English breeders improved on the Bakewell type by increasing the size of the sheep and bettering its fleece, the Canadian breeders followed by importing larger and heavier rams, until in a few years the short-legged, compact, fine-boned, but coarse-wooled Bakewell Leicesters were not to be found. What the breed gained in size, fleece, and hardiness it lost somewhat in earliness of maturity, quickness of feeding, and, to some extent, in quality of meat. From 1846 to 1862 the Leicesters and the Southdowns held sway and carried off all the prizes at the fairs, then in their infancy in Canada.

Many American flocks on the northern boundary were recruited from the Ontario flocks. Shortly after the introduction of the Leicesters into Ontario they were imported into New Brunswick, and from thence into Maine, where they were crossed on Merino grades and on the common sheep of the country.

The Cotswolds were introduced into Canada about 1856, and began to attract the attention of the farmer by their great size and heavy fleeces of long wool. They became immensely popular, and "the formerly handsome flocks of Leicesters were turned into nondescripts by the injudicious introduction of Cotswold rams to cross upon them." The popularity of the Cotswolds continued for many years, and monopolized the attention of sheep-breeders at the fairs. The Border Leicesters also were popular, and many of them had been introduced. These and the Cotswolds gave large carcasses of mutton of a coarse quality with a tallowy flavor, often going as high as 200 to 250 pounds the dressed carcass.

From their first introduction into Canada there was a demand for the Cotswolds from the United States, and many were sold at good prices. The demand was largely increased by the American tariff law of 1867, when there was remarkable change in the value of combing wools.

They increased in price, while fine wools ruled scarcely higher than in war times. A class of manufactures had come to be fashionable that required these combing wools, and the supply from Canada was, in a measure, cut off by the operation of the new tariff, which enlarged the home demand, kept prices up, and the wool chiefly at home. The small amount of combing wool in the country was not equal to the demand, and consequently there were large importations from Canada of Cotswold and Leicester sheep, principally the former, which were taken into all the States from Maine on the east to Wisconsin on the west and as far south as Tennessee. The introduction of the Cotswold was encouraged by the woolen manufacturers and by many of the agricultural papers. The breeding of Cotswold stock by Canadian breeders for the farms of the United States became a profitable industry. As the Cotswolds and other English breeds increased in Canada the Merino declined. A Canadian correspondent of the Cultivator furnishes a glimpse of Canadian sheep husbandry in 1871:

At the present day (1871) it is rare to meet with a flock of Merinos in Ontario; but among the poorer classes of farmers a sort of conglomerated breed has sprung up, the result of crossing the cheap-bought rejected culled rams of the Leicester breeders upon the remains of the old Merino flocks, sold cheap or given away, by the better-class farmers, to make room for the mutton breeds. These sheep, kept by the present owners as near to the starving point in winter as will keep life in them, are as yet far too common, and, being generally turned out in summer to wander about the country roads in search of grass, are apt to give a stranger traveling over the country a bad opinion of our sheep husbandry. The sheep have all the bad points of the Merino, with but little compensating qualities derived from the Leicester, and being, after the first cross, generally bred in-and-in, and the best sold to the butchers, make about as worthless a class of sheep as one can see anywhere, giving inferior fleeces of 2½ to 5 pounds on carcasses of 60 to 100 pounds, the weight depending upon the amount of Leicester blood. They are found all over the province, but are most numerous in the Niagara peninsula and the older settlements bordering Lake Erie and Ontario. In Lower Canada, near Quebec, the French *habitans*, kept in ignorance and poverty under the peculiar feudal laws, resist all attempts at improvement as innovations upon their customs, and keep to a small, but hardy, race of sheep of the Merino class, probably originally derived from Brittany and Provence. In that portion of Quebec bordering on Vermont and northern New York known as the eastern townships, and settled by an English-speaking population, the mutton breeds have been introduced and are fast superseding the Merinos. More recently the fashion has set towards the Cotswolds, and though, as yet, there are but very few flocks of that breed kept in their purity, their great size and heavy fleeces of fine-combing wool is an inducement to many farmers who are not particular about purity of blood to use Cotswold rams in their established flocks, in order to obtain an increase in size in the carcass without injury to the quality of their wool. The most recent importations of the Leicesters have been Border Leicesters, a large-framed, broad-backed, stout-limbed race, carrying heavy fleeces of combing wool on carcasses of great weight which when they reach the butchers' hands appear likely to prove more showy than eatable. With the advent of the mutton breeds of sheep not only has sheep-breeding in our mixed system of husbandry been profitable, and our markets well supplied with first-class butchers' meat, at reasonable prices, but the demand for our wools has increased to an extent never anticipated, and the price goes relatively higher as the yield of fleece per head grows larger.

Prior to 1870, the Lincolnshires, the Shropshire Downs, the Hampshire Downs, and the Oxford Downs had been imported to a limited extent, as had also the Cheviots; but none of these appeared to find favor with the Canadian farmers, and but few pure flocks were kept; but when the demand for mutton in Great Britain and the United States was greatly increased, and the lovers of good mutton rejected the great coarse sheep that carried all their fat on the outside and about the kidneys, in favor of a moderate-sized sheep, that had the fat well intermixed with the lean all through, the Southdowns, and the crosses from it upon the native sheep, rose in favor among the farmers, and the Cotswolds and Border Leicesters lost their attraction. Where farmers formerly bred mainly for heavy fleeces of coarse wool, suitable enough for the making of the coarse clothing and blankets then fashionable, they began about 1880 to cross for mutton, using the Southdown, the Shropshire, and Oxford Down. Since that time many flocks of the best English breeds have been maintained at a very high standard, and have been freely used by the breeders of the United States in the improvement of their flocks. All breeds are grown, and the views of the breeders are far apart as to the most profitable one.

There is such a close inter-relationship between the sheep husbandry of Canada and that of our northern tier of States, that a communication of Prof. Thomas Shaw, of the Ontario Agricultural College, on the sheep husbandry of Ontario, has much interest. Ontario is the only province of the Dominion of Canada which has gathered official statistics for several years past in reference to live stock, consequently it is impossible to give exact figures bearing upon the sheep industry that will apply to the whole Dominion. Ontario is, by far, however, the most important of the sheep-producing provinces. To so great an extent is this the case that it is more than probable that Ontario produces more sheep than all the other provinces combined.

Prof. Shaw, under date of February 8, 1892, in a letter to the writer, says:

This province has the following pure breeds: Leicester, Lincoln, Cotswold, Oxford, Hampshire, Shropshire, South Down, Suffolk, Dorset Horn and Merino. The Leicesters far outnumber any of the other breeds, but the dark-faced breeds are gaining ground rapidly. Of these the Shropshires are the most numerous at the present time. The dark-faced rams stand high in favor for the production of lambs for mutton. The offspring are compact in form, weigh well, produce a class of wool such as is wanted at the present time, and the mutton obtained from them is well intermingled with fat and lean.

The number of sheep kept on the occupied lands of Ontario at the present time is less than 8 head to every 100 acres; there is but little doubt that this number could be nearly doubled without any additional cost for food in the summer season, as from 12 to 16 head of sheep on a farm of the size indicated would only act the part of scavengers by destroying vast numbers of weeds, and consuming herbage in by-places which would otherwise go to waste.

It was formerly the custom in this province to sell the lambs to the local butchers in the various summer months, or to put them upon the export market in November

and December. Many are now beginning to feed them on into the winter months, when much better prices can be obtained for them.

The growth of rape to provide pasture for lambs in this country is rapidly on the increase. Our experiment station has given this matter much attention during the past three years, as also the fattening of lambs in winter. In 1890 we pastured 37 head of lambs and 17 head of steers upon about 50 acres of rape, for two months. In 1891 we pastured 660 lambs upon 40 acres of rape for two and one-half months. One acre will feed from 12 to 15 lambs for fully two months, and in that time they should gain from 16 to 24 pounds in weight. In the winter season we feed the lambs upon a ration of clover hay, turnips, mangels or corn ensilage, and grain unground, as oats and peas. The grains per month run from 8 to 11 pounds per head.

Feeding lambs in the winter season is likely to become a very profitable industry in this country. When preparing them for shipment to Great Britain we have them shorn in the early part of October. They are then in the best form for shipping in the early spring to meet all the variations of weather. In 1889 we purchased lambs, October 4, at $3.76 per head, and sold them the following March at $7.71 per head. In 1890 we put 20 lambs under experiment, which were bought in October at an average of $3.76, and refused the following March an offer equal to $11.64 per head. The offer was refused because the lambs were being prepared for the English market. In the autumn of 1891 lambs were brought to this station from Prince Edward Island, a distance of 1,100 miles. They were laid down here at an average cost of a little more than $3 per head. A car load of these lambs are sold to go to Halifax in March (1892), within about 100 miles of where they were purchased, and after all expenses are paid we feel quite sure in reckoning on a fair profit on the lambs. Had we sold our lambs last November or December we would have lost money upon them, but by carrying them on into the winter months we are making a good profit. There is room for great enlargement of the sheep industry in Canada. The maritime provinces in the east have much land that might be turned to excellent account in pasturing sheep in the summer season, and the provinces of the Canadian northwest are capable of sustaining sheep by the million where now they are found only in very limited numbers.

The Canadians follow the English system of sheep husbandry and find their profit in it in the advance price received for their mutton in the markets of the principal northern cities, where the demand for it is steady. Butchers in Boston and New York make a specialty of it. Boston consumes annually from 70,000 to 80,000 Canada sheep, and about 1,000 are daily shipped from Canada to all parts of the American Union.

CHAPTER V.

INTRODUCTION OF THE FINE-WOOLED SHEEP INTO THE MIDDLE AND THE ATLANTIC SEABOARD STATES, AND THE SUBSEQUENT PROGRESS OF SHEEP HUSBANDRY.

NEW YORK.

The first Merino sheep introduced into New York was by Delessert and Dupont in 1801, as has been fully noted. The first full-blooded flock was founded by Chancellor Livingston in 1802, and has also been very freely treated in preceding pages. From the Livingston flock some full-blood flocks and many half-blood and mixed flocks were established prior to the importation of 1810–'11. Livingston added to his flock the choicest sheep of these importations, and was an enthusiastic bidder at the sales, although he believed that his own sheep, both in beauty of form and quality of fleece, were decidedly superior to the new importations. He added 6 Guadaloupes to his flock—a longer-legged and longer-bodied sheep than the Paulars, heavier than the Infantados, and equal to them in the fineness of their fleeces. These were, according to Livingston, in point of form, beauty, size, and fleece, the finest of the imported sheep, though still far inferior to the Rambouillets. He purchased 14 Paulars, which he describes as very close-wooled, very compact in their make, and too short for beauty. He bought also 2 Negretti, larger than the Paulars, but not so fine-wooled. He added also Montarcos and Aguirres, and March 22, 1811, was in daily expectation of 6 Escurials, none of which he thought had yet been imported. He was forming a complete flock for the purpose of studying the advantages and defects of each family, and, by proper admixture with his rams, improve them all. Death overtook him in the midst of his many labors, and the guiding spirit necessary to the development of his plans was wanting.

Of the many importations of 1810–'11 it is difficult to find traces after the arrival and sale of the sheep. As they were disposed of mostly to men of large possessions, who made wool-growing and not sheep-breeding their business, pedigrees were not thought of, and purity of blood absolutely disregarded. What was wanted was a large production of wool, and other matters were entirely secondary. The best sheep were crossed without regard to the cabañas whence derived, and the best rams were generally used on the common sheep to bring them up to satisfactory wool-growers. The consequence was large flocks of mixed sheep

half to fifteen-sixteenths blood, and comparatively few full bloods. And it happened also that when manufacturers failed in 1815–'20 whole flocks went by the board, and history has no note of them. The history of some, however, has been partially preserved.

Among the early arrivals at New York, in 1810, was the ship *Traveller*, with 24 Escurial sheep, consigned to Richard Crowningshield. These sheep were sold at high prices to various parties, mostly on Long Island, and were in part the foundation of many superior flocks. Among the purchasers was Andrew Cock, of Flushing, and from two ewes, for which he paid $1,100 each, and some superior Paulars, purchased subsequently, came the celebrated flock and strain bearing his name, and which has been noted when treating of the Vermont flocks. In 1844, when the Merinos took a new lease on popularity and blood began to be more regarded, Dr. Henry S. Randall received from Effingham Lawrence a letter detailing the origin of this flock, which was published in the Cultivator of that year.

Yours is duly received, in which you refer to a conversation we had on the subject of Merino sheep, and particularly of the quality and purity of the flock of Andrew Cock, who was my neighbor. We were intimate and commenced laying the foundation of our Merino flocks about the same time. I was present when he purchased most of his sheep, which was in 1811. He first purchased 2 ewes at $1,100 per head. They were very fine, and of the Escurial flock imported by Richard Crowningshield. His next purchase was 30 of the Paular breed, at from $50 to $100 per head. He continued to purchase of the different importations until he ran them up to about 80, always selecting them with great care. This was the foundation of A. Cock's flock; nor did he ever purchase any but pure-blooded to my knowledge or belief. Andrew Cock was an attentive breeder, saw well to his business, and was of unimpeachable character. His certificate of the kind and purity of blood I should implicitly rely on. I recollect of his selling sheep to Leonard Beedle, of Vermont.

Long Island was early noted for its fine flocks of sheep, and Judge Lawrence, Andrew Cock, Timothy Mallet, and Silas Titus had Merino flocks of high repute, from which they furnished pure-blood rams and ewes for many years to various parts of New England and the Middle States, particularly to northern New York, many of the superior flocks of Washington County tracing thence their origin. The Long Island sheep were noted for fineness and quantity of wool, and in 1822 there was sheared from one sheep 11 pounds of well-washed wool. In 1843 the Merino sheep had nearly disappeared from the island; it had given way to crosses of the Leicester and Southdown as mutton became more an object than wool.

Washington County, N. Y., was long famed for its sheep husbandry, and early introduced the Merino. The first Merino blood coming into the county appears to have been from the Stoddard flock, of Vermont, a half-blood brought by Aaron Cleaveland, and in 1809 a full-blooded buck of the same flock was hired from Mr. Stoddard for $50 by N. Wilson, of Salem, for which he received the bounty of $50, offered by the State to the person who should introduce the first Merino buck into

each county—a measure also recommended by the governor of New Hampshire at the next session of its legislature. In 1810 the county premium for domestic cloth was given to that made from the wool of Mr. Cleaveland's quarter-bred lambs.

About this time also a Mr. Merritt, of Troy, who owned a large tract of land in the county, placed upon it a considerable flock which was derived from the Humphreys stock. This flock was managed after the Spanish mode. Two shepherds who had been educated to the business, accompanied with their dogs, were in constant attendance upon the flock, and many persons from the surrounding country were attracted by the novelty of their dress and employment to pay them a visit. This flock was soon disposed of, and many of them went to the formation of the Wilkinson flock, which, for so many years, sustained such a high reputation.

Thus from the Humphreys importation a portion of the Merino blood went into Washington County at an early day. At first, however, efforts were confined only to the rearing of grade sheep. Animals of pure blood were too scarce in the county and commanded too high a price to be within the reach of ordinary farmers; but an avenue was soon opened to the procurement of full-blood Merinos.

Robert Prince, who had purchased some of the Jarvis importation, had a son engaged in business at Salem, and through this son Alexander McNish was induced to engage in the business of raising fine-wooled sheep. A contract was made between Robert Prince and Mr. McNish, which, as it contains the element of what was then regarded as the most essential point in the management of the Merinos and what was deemed equitable terms for letting them, is here stated on the authority of Asa Fitch, and substantially in his language.* Mr. Prince agreed to furnish a ram and two ewes, warranted to be full-blooded Merino, and Mr. McNish was to furnish one hundred common ewes, and be at the expense of keeping and managing the flock for the period of seven years. The ram was not to be turned in with the ewes before the 1st of November, and the lambs were to be weaned or separated from the ewes on the 1st of September. On the 1st day of June, annually, half of the wool was to be given to Mr. Prince. At the end of the first year the hundred common ewes were to be sold and half the proceeds thereof paid to Mr. Prince, and the breeding continued with the full-blood ram and the half-blood ewes. The buck lambs were to be annually divided on the 1st of September, and each party was thereafter to take charge of his own half of these. If either of the three full-bloods died or became imbecile, another was to be furnished by Mr. Prince to supply its place. At the end of the seven years the flock that was then existing was to be equally divided.

For the three imported sheep by which Mr. Prince was to fulfill his

* Survey of Washington County, in Transactions of New York Agricultural Society, 1849.

part of the contract he had paid $1,800; but, to be secure against any casualties, a pair of sheep, in addition to these, was furnished by him. Two rams and 3 ewes, therefore, were turned over to Mr. McNish and placed on his farm near Salem, October 11, 1810.

The community here, like communities elsewhere, was at the time much divided in opinion regarding Merino sheep, many believing them entirely unsuitable to the climate and that they would prove a curse to the country, and one of Mr. McNish's neighbors, a hardheaded Scotchman, when these sheep first arrived gave distinct notice that if the rams broke in among his flock he should without ceremony shoot them down, and hold him responsible, in addition, for whatever damages he sustained by their presence among his common sheep. Fortunately, however, the Merinos had nothing of that roving disposition so common to the native sheep of the country, and therefore never gave the Scotch neighbor any molestation. And before long it was surmised that the Scotchman's sentiments had undergone some change, for it was noticed that on one or more occasion he was very particular to pasture his own flock in the field adjoining that in which the Spanish rams were pastured, and he was not at all particular, careless in fact, in keeping up his part of the line fence.

The experience of Mr. McNish with these sheep represents the experience of many who began at this time the foundation of Merino flocks. His sole experience in this branch of husbandry was confined to the hardy common sheep of the country, and he was consequently greatly disappointed with the luck that attended his operations with the Merinos. The weather through the first spring was particularly disastrous; the month of April being cold and stormy, and although the flock was well provided with sheds and had every other practicable care bestowed upon it, it availed but little, and nearly all the lambs perished. They exhibited no vigor, the climate seemed too chilly, and life was a burden to them. On coming to foot up accounts of the first year's operations under his contract Mr. McNish found that instead of at least 100 common lambs that he might have reared from the same ewes with far less care and expense, he could only claim ownership to about 16 half-bloods, to obtain which he was giving Mr. Prince 50 common ewes and their crop of wool. In view of this result he was much discouraged.

With extraordinary care each of the imported ewes succeeded in raising a lamb. The first of these was yeaned at a time the half-bloods in the fold were perishing by scores, and as this was the first Merino lamb produced in the country, its history, as far as known, possesses some interest. It was a ram, and to shield it from the rigors of the climate and to place it in an atmosphere to the full "as temperate and genial as that of the vine-clad plains of Estremadura," Mr. McNish fitted up a place in the corner of a cellar kitchen, the apartment which was the main abode of the household, and here the lamb was kept so long as

the cold weather lasted. The following summer, while pastured with the flock at some distance from the house, it was often observed and admired, and some unknown admirer took it away, leaving an ordinary lamb in its place.

Of the two other full-blood lambs one was also a ram, but in appearance so inferior to the first that it was regarded with but little esteem, and was sold that autumn of 1811 for $80 to John McLean and his son-in-law, David Campbell, the latter of whom now commenced that experience in sheep husbandry that resulted in the foundation of the Campbell flock, one of the most celebrated flocks in the country forty years thereafter.

Bad as was the luck with the half-blood lambs and the full-blood rams, that with the imported ewes and lambs was worse. The lamb of one of the ewes, the second season, expired without any apparent cause a short time after it was yeaned, and two of the old sheep soon followed it. The probable cause was overfeeding. When the Merinos arrived at Salem they were all in wretched condition as to flesh. They were of course regarded with too much favor to be allowed to remain in this miserably poor condition, and were immediately put on good pasture, and, during the winter, in addition to all they needed, corn was fed them, about a pint being given to the three ewes twice a day. Thus their keeping was liberal but not extravagant, and they were only in fair condition when turned out to pasture the spring after their arrival. But they now took on fat surprisingly, and twelve months afterwards, when put to grass the second summer, they became so excessively corpulent that they were utterly unable to carry themselves about any longer, and two of the fattest of them quietly laid down and died. A post mortem examination showed a layer of clear fat upon the ribs full 2 inches thick on the outside, and a half inch on the inside. For a time all the sheep, young and old, were so fat that it was feared the whole would perish.

Upon the death of the two ewes, another ram and ewe which had cost him $900, were furnished by Mr. Prince. As there was quite a contrast between the two of these rams from which the flock was mostly reared, and from which so much of the Merino blood for the next fifty to seventy years in the country was derived, we quote entire Mr. Fitch's description of them:

> The favorite of the first two that were received was a large-bodied, smooth-faced, clean, white-wooled animal of a most stately appearance, carrying his head high and moving about with an air of dignity, as if perfectly conscious that the best blood of old Castile and Leon was coursing through his veins. Yet his wool, though so clean and nice, was rather thin and short, and coarsish on the hips. Accustomed to the sight of this genteel appearing animal much disappointment was felt with the last buck on its arrival. It carried its head lower, and was to appearance a dirty, scurvy-looking runnion, little worthy of being brought such a distance from the place of his birth. But all his bad marks were external, and he was truly one of the most valuable bucks that has ever been in this section of the country. Though his wool was so gummy and looked so foul and blackish externally, on parting it it was found to be of a clean pure white, very fine, and growing remarkably close and long, yielding a

fleece which weighed over 10 pounds. The fleece, moreover, was unusually even throughout, being fine upon the flanks. His legs were wooly down to the very hoofs, but that enormous dew-lap or ruffle which belongs to the Paular sheep of the present day was wanting, there being merely a slight naked wrinkle in the skin along the throat, scarcely amounting to a fold.

Mr. Fitch believed from what was remembered of the first 2 rams by those who saw them, that of the most esteemed, and which is described first, was a pure Montarco and the other an Aguirres. The last ram that was received, it is well remembered, was stated in the contract to have belonged to the Prince of Peace, and it showed all the marks of a Paular of the choicest kind.

Bad luck still pursued Mr. McNish. In the fourth year one of the imported bucks was killed. Peace came in 1815, and wool fell to one-third its former price, and the value of sheep depreciated accordingly. He sought to secure an annulment of the contract and succeeded. The number remaining to him was not over two dozen, and for nearly ten years the flock made no further increase. Three causes are assigned for the bad fortune that attended his efforts—the tender constitution of the sheep, inadequate shelter, and having the lambs too early in the season.

The flock was taken by a son of Mr. McNish, and in 1836 there were added to it 2 rams obtained from William Jarvis and a few ewes from Alexander Livingston's flock, and in 1850 it numbered 127, old and young, 83 being adult ewes. The fleeces of the animals then averaged 2 pounds 9 ounces, from which they had not varied for fifteen years. From this flock some full-blooded rams and half-blood ewes were disseminated throughout that section of the country. Among the persons thus obtaining the sheep and forming a noted flock was Alexander Livingston, of Greenwich.

Mr. Livingston commenced growing fine wool in 1811 by hiring one of the imported rams of Mr. McNish's flock for the season, paying therefor $50, and being restricted to the use of 50 ewes, from which he raised 20 lambs, whose fleeces averaged 3¼ pounds. The 2 other McNish rams were successively hired for $5 each. After this full-blooded rams were obtained from Isaac Bishop and others, until the flock was of so high a grade that good judges to whom samples of the wool were shown pronounced it pure Merino. In 1820 he bought some 14 or 15 ewe lambs of the Escurial flocks on Long Island, and in 1822 40 more ewe lambs, nearly all of them coming from the flock of Andrew Cock. These were all the ewes he ever bought, save 1 Saxon ewe of Henry D. Grove.

The next pure Merino blood taken into Washington County, after that of Mr. McNish and Mr. Prince, was by Isaac Bishop, and was also Long Island blood. Mr. Bishop was a member of the Society of Friends, and through that connection became early acquainted with the quality of the Long Island sheep owned by Andrew Cock, Effingham Lawrence,

and others. He soon became known as a successful grower of fine wool, and was a large dealer in that of his neighbors.

Soon after the peace of 1815 small flocks of grade sheep, particularly rams, were annually made up by speculators from among the Long Island flocks, and were sold through Washington County, and thus a tinge of the Merino blood became infused into all the sheep. The McNish and Bishop flocks, however, appear to have been the only ones containing full-blood animals, excepting stock rams, until about 1820 and 1822. The high character of the Long Island flocks became generally known through the country at that period, and also the fact that pure-blood sheep could be obtained from them at lower prices than they had formerly given for grade rams. Pure-blooded and choice animals, moreover, attracted more attention and were more sought after then than they had ever formerly been, in consequence of the emulation that was incited by cattle shows and premiums offered for superior stock.

Many enterprising farmers were thus induced to visit and make purchases from the Long Island flocks, $5 and $6 being the price generally paid in autumn. From the flocks of Effingham Lawrence, Andrew Cock, Timothy Mallet, and Silas Titus, the purchases were generally made. And it was about 1820 to 1824 from the most renowned flocks in the country the Escurial blood became largely introduced into Washington County, and directly from this have many of her noted flocks descended.

Soon after the Long Island, or so-called Escurial, blood had been well established in Washington County, public attention was turned to the Saxony Merino, and the owners of the best flocks became anxious to obtain at least a cross with this blood. In 1827 they were enabled to do this through the arrival of a large number of Saxons belonging to Henry D. Grove, which soon made the blood quite common. Most of the flocks were crossed, but the fleeces were very light, arising in great measure from the fact that the first of these Saxony sheep were from a poor lot sold at Brighton, Mass. The next importation into the country was of better sheep, some of the rams being the heaviest wooled of any Saxon stock brought into the country. Grove rated his Saxons as giving 2¾ pounds of wool, well washed on the sheep's back. The mixed Saxony and Spanish Merino gave a heavier fleece, and the weight of a flock of this kind for seven consecutive years is preserved.

Year.	Number sheared.	Product.	Average weight of wool per head.
		Pounds.	*Lbs. Ozs.*
1829	105	313	3
1830	92	294	3 2½
1831	114	425	3 11½
1832	125	396	3 2¾
1833	103	348	3 6
1834	130	462	3 8
1835	166	521	3 2¾

These were fed under cover, and averaged from 2 ounces to a pound more than when fed in winter out of doors. This cross was popular with the wool-growers until 1841 to 1843; many were reared and a large amount of wool was annually produced. But from 1842 to 1845 a change took place, and flocks of 2,000 to 3,000, of which there were many in the county, were changed back to the old Spanish Merino by the introduction of rams from Connecticut and Vermont, and the weight of fleece increased to 6, 7, and 8 pounds, while the mixed Saxon and Spanish remained at 3 to 3½, an occasional pure bred Saxon touching the former figure.

The purest and best Saxony flock in the State was that formed by Henry P. Grove, which, upon his death, was sold at auction in the fall of 1844, and realized an average of $7 per head. The Ohio portion of the flock, kept in Medina County, was sold about the same time and averaged $9 per head.

Saratoga County adjoins Washington, and like it early introduced the Merino, some of the farmers procuring their stock direct from Col. Humphreys and Chancellor Livingston. Silas Adams, of Milton, bought a pair of Col. Humphreys at a very early date, and bred a pure flock as late as 1836. The Saxons crossed nearly all the flocks, and in 1841 there were large numbers of sheep of the mixed Merinos.

In 1810 Elam Tilden, of New Lebanon, Columbia County, purchased a full-blooded ewe, and shortly after some ewes and a ram of other importations, from which stock sprang quite an extensive flock of full-blooded Merinos, which, in 1825 or 1826, were crossed with the Saxons.

In 1811 Spanish Merinos were taken into St. Lawrence County by David Ogden, who had purchased 9 ewes and 1 ram in October, 1810, for $1,515, to which were added January 14, 1811, 9 ewes and a ram at a cost of $512 and 1 black ram at $150, and some other sheep at lower prices.

The prices given and received for Merino sheep in October, 1813, in the New York City market, were: Escurial rams, $300 to $315, very fine wool; Paular rams, $50 to $100, very best quality; Paular rams, $23 to $44, inferior and old; ram lambs, $55, 6 months old; half-blood ewes, $14 to $18, fine wool; half-blood ewes, $12 to $15, inferior; full-blooded ewes, $100 to $123, fine wool; full-blooded rams and ewes free from jarr or dog's hair, and whose pedigree could well be authenticated, uniformly commanded good prices and found ready sale.

A public sale on November 13, 1813, of Merino sheep from the Mount Merino flock of Mr. Wells, of Westchester County, and from the flock of Judge Canfield, of Sharon, Conn., realized as follows:

	Each.
68 full-blooded Merino ewes	$127.98
31 full-blooded Merino ewe lambs	69.50
16 full-blooded Merino ram lambs	31.50
39 three-fourths blood ewes	26.28
74 one-half blood-ewes	10.50

Although the Merinos were now very numerous in the United States, and particularly in the vicinity of New York City, these figures show that they still ruled high, indicating the great profits accruing on them, and the consequent desire to possess them. This desire was not confined to full-bloods, and to supply the demand for a cheaper animal with fine wool the market was reasonably full of one-fourth, half, three-fourths, seven-eighths, fifteen-sixteenths, and thirty-one-thirty-seconds blooded sheep, which brought fair prices and went on to farms where it was proposed to substitute them for common sheep. A common method was for a few neighboring farmers to buy each four or five of these sheep, and between them a full-blooded ram, and thus gradually convert their flocks. The purchase of a half-blood or a three-fourths blood shortened the time by a year or two at not much additional cost. This was a method sometimes adopted to grow rapidly the raw material for the support of a woolen factory, it being found more desirable to hasten the product by buying half-bloods than to wait an additional year by starting on the common sheep, for the full-bood Merinos were not sufficiently numerous to supply the large demand of the manufacturer. Where wealth was at command extensive and expensive arrangements were made, as may be seen by this extract from the New York Gazette, May 9, 1814:

> We understand that Governor Tompkins has purchased a large tract of land on Staten Island, which he contemplates inclosing for an immense sheep-fold for the purpose of improving the breed of Merino sheep. The land is high, intersected with pleasant valleys. The line commences in the rear of the quarantine ground and takes in all the mountains seen from New York City. It will cost $100,000 to build a stone wall around it.

If Governor Tompkins seriously contemplated what the paper credits him with, it is certain that he never carried his thought into execution.

The Merinos on the Hudson were of a superior quality, and the recorded weight of many fleeces show a high average. In June, 1813, 14 animals sheared 110 pounds of wool; 8 gave 60 pounds 12 ounces, one ram yielding 13 pounds. In June, 1819, Col. John Storm, of Fishkill, sheared a full-blooded Merino ewe whose fleece weighed 18½ pounds. The ewe was 4 years old and had never before been shorn. The wool was of fine staple and from 16 to 18 inches in length.

While New York as a State is particularly well adapted to sheep breeding, the central portion and the western are peculiarly circumstanced in that respect, possessing fertile soil producing the various kinds of grasses and forage plants. The Merinos soon found their way westward from the Hudson River counties. In 1807 N. Goodsell, afterwards the editor of the Genesee Farmer, procured a pair of Merinos from Col. Humphreys and drove them into Oneida County. With the exception of the Dupont ram and the Livingston flock they were the first introduced into the State. The Merinos were also taken into Oneida County in 1818 by the Mount Merino Association, organized by

Dr. Seth Capron, who was associated with Thomas R. Gold, Newton Mann, Thaddeus B. Wakeman, Col. Jenkins, and others. These gentlemen had a capital stock of $40,000 invested with the object of importing and breeding the Spanish Merino sheep for supplying the woolen mills which were being constructed at that time in that section of the State. Besides sheep purchased of Livingston and some from Humphreys, others were purchased from the several importations made into Connecticut and Rhode Island in 1810–'11. Upwards of 1,000 choice native ewes were secured and the thoroughbred rams crossed upon them. The sheep were bred and cared for upon farms belonging to Dr. Capron in Deerfield, Oneida County, directly across the Mohawk River from Oriskany, and after the most approved methods. They were separated into flocks of 100 each. Good winter shelter was provided for them and every convenience for feeding, while the arrangements for care of ewes and young lambs in the spring were complete. In summer the pastures were subdivided to allow frequent changes, which was considered to be very important for the health of the stock. The spring washing of the sheep before shearing took place in the Mohawk River, and at the shearing every regard was had to exactness of detail. The fleeces were graded according to fineness; the qualities being graded at full-blood, seven-eighths, three-fourths, and half. It was then rolled, tagged, and sent to the factory to be manufactured into broadcloths, cassimeres, and satinets. The value of the wool was from 9 to 10 shillings per pound. Satinets brought from $3.50 to $7, and broadcloths from $10 to $15 per yard. These prices, of course, made the Mount Merino Association and factory paying institutions, and particularly so during the continuance of the embargo and war of 1812. But the establishment of peace and the opening of our ports to the introduction of foreign woolens soon so materially reduced the demand for domestic productions that the wool produced by the association could find no market. As a natural result the manufactory discontinued its operations, and the sad sequel was the killing of some 2,000 costly sheep for their pelts, their fleeces not paying the cost of keeping.*

Gen. John C. Ellis introduced some of the early Merinos into Onondaga County, and their blood remained in that county as late as 1860. Tompkins County received them at an early day, and in 1825 extensive flocks were to be found in every township, but the Saxonies, soon after introduced, completely annihilated them in the course of a few years. In 1809 or 1810 Merino sheep were introduced into Niagara County, and at Lewiston, 8 miles below the great falls, there was in 1811 a domestic manufacture of their wool on a small scale.

In 1811 Nicholas Williams, captain of a merchant vessel, on his return from Spain, brought with him six tall Negrettis, which he took to

* Register of the New York State American Merino Sheep Breeders' Association, Vol. 1, 1883.

Seneca County, where he settled at Lodi. In 1815 or 1816 he removed to what is now the adjoining county of Schuyler, and Robert Herty purchased from him a ram whose fleece weighed 14 pounds. Several colonies sprang from this Negretti flock and the blood was generally disseminated throughout Seneca and Tompkins counties. In 1811 Col. Troup, agent of the parties connected with the Holland purchase, sent four Merino rams for the use of the settlement at Geneva, Seneca Lake.

James Wadsworth took a Livingston ram, for which he paid $1,000, to Ontario County as early as 1808, and General Wadsworth founded a flock in Genesee County, from which L. A. Morell commenced his flock of 500 sheep, the half from the Wadsworth flock and half from the best common sheep he could procure.

Humphrey Howland, of Aurora, Cayuga County, laid the foundation of a Spanish Merino flock in 1824 or 1825, that up to 1850 averaged 2,000 in number. The soil of his farm was a rich, calcareous loam, producing good crops of wheat, corn, and grass. The statement made by him in 1850 regarding his flock is of interest. For eight years, or up to 1832, he bred the Spanish Merino pure, then he crossed with the Saxon. The cost per pound for growing fine Saxon wool was about 28 cents, and the average weight of the fleece was 2½ pounds. The cost of growing Spanish Merino wool was 22 cents per pound, and the average of the fleece 4 pounds. The Saxon wool sold at 38 cents, and the Spanish Merino wool at 31 cents. It was not any more, if as much, expense to raise Spanish Merino wool per pound as to raise common coarse wool. The Saxon Merino wool was much the finest, but the animal did not have the constitution of the Spanish Merino. The wethers of the latter were worth 50 per cent more than the Saxon, and were nearly equal to Southdown for mutton. His flock was then fine Saxon, but he was crossing them with the Spanish Merino, such as he first kept. One ton of hay produced 28 pounds of Saxon wool, or 36 pounds of Spanish Merino wool, and one ton was sufficient for 11 Saxons or 9 Spanish Merinos during seventeen weeks of winter foddering. The Spanish Merinos would eat coarser provender than the Saxons, and were rather more profitable than the latter, and 40 per cent more profitable than such sheep as were common in the State previous to the introduction of Merinos. The proportion of lambs annually reared, to the number of ewes, was, of Saxon Merino, 40 per cent, of Spanish Merino 60 per cent, if they had lambs at 2 years of age.

On the slight revival in wool-growing between 1820 and 1830 some fine flocks were formed, some of which have been perpetuated to the present day. About 1822 John Johnston, of Geneva, purchased about 500 Merinos from Hon. R. S. Rose, then a noted breeder of Seneca County. In 1823 a Mr. Hoppin, of Madison County, brought from Berkshire County, Mass., 4 full-blooded Merino rams, and the next year 5 rams from Hinsdale, Mass., and 12 from the fine flocks of Pittsfield. In 1824 Josiah Short, of Hemlock Lake, Livingston County, began a

flock by the purchase of a ram lamb and 10 ewes of Horace Gilbert, of Richmond, brought from Rhode Island the preceding year. The flock descended to J. C. Short, and still exists, and has a most excellent record for fine wool and heavy fleeces. In 1825 Edward Swan, Honeoye, Ontario County, had presented him a pair of pure-bred Merinos, a ram and ewe, from a choice Long Island flock. They were bred in-and-in for fifteen years, when a Rich ram was used in the flock, and after this other rams from noted flocks. In 1825 E. Kirby, of Brownville, Jefferson county, formed a flock by the purchase of 500 high-grade Merinos and by subsequent additions, which he endeavored to improve by the infusion of Saxon blood. He soon repented this experiment, and purchased rams of D. C. Collins and Jacob N. Blakeslee, and began in 1842 to breed back to the Spanish Merino. Reed Burritt began a flock of Jarvis Merinos, crossed with the Saxons, in 1825 and 1826, and soon found he had a flock of tender sheep and light shearers. Twenty-five per cent of lambs were lost. In 1835 he removed to western New York, abandoned the Saxonies, and built up a new Merino flock, purchasing Spanish Merinos of Stephen Atwood, Connecticut, and W. R. Sanford, Vermont. Subsequently he purchased rams and ewes of S. W. Jewett and John T. Rich and built up a flock second to none in the State, and from which many have drawn their best blood, and some of the Wisconsin flocks owe their excellence to a few taken there in 1846, 1850, and 1853. Another flock, formed before 1830, was that of Mr. Walker, De Ruyter, Madison County, which was a Jarvis flock. Matthias Hutchinson, of Kings Ferry, was an early purchaser from Mr. Walker, and formed a flock of 300 to 500 Merinos, good sized and strong constitutioned. From the Hutchinson flock Mr. S. N. Franklin in 1835 purchased 25 ewes and bred to Vermont rams. In 1883 this flock numbered 5 rams and 68 ewes. A branch of this flock is that of Spencer D. Short, of Honeoye, who purchased from stock raised by Mr. Franklin. Henry S. Randall procured a pure flock of Humphreys sheep in his boyhood days, and bred them pure and distinct from sheep of other importations for several years. Later in life he drew rams from Vermont and elsewhere, and mixed different strains of American Merino blood. There were many others who, from 1820 to 1840, formed flocks, principally by purchases in Vermont, but the information concerning them is meager and unsatisfactory, and they have ceased to exist, leaving no history.

The New York Merino Register states that few, if any, flocks appearing in it were established earlier than 1860. This Register for 1883, however, directs special attention to the great care bestowed upon their flocks by many of the New York breeders that enabled them to trace the individual pedigree of each sheep through several generations to the various purchases which form the foundation of flocks. Most of the New York flocks trace their ancestry to Vermont and Connecticut, and New York now claims a considerable share in the honors accruing

to breeders for the great triumph in sheep-breeding during the last thirty years. They have kept abreast the march of improvement where they have not led, and challenge inspection of their flocks to prove their assertion that for fine wool growing they stand second to no stud flocks of the country. They also call attention to the fact that when, a few years since, the Japanese Government sought to improve its live stock, the selection of Merinos was made from New York, principally from the flock of J. J. Brainard.

Before the introduction of the Merino sheep by Chancellor Livingston and the effort he made to desseminate them, very little attention had been paid in New York to sheep of any kind. But the introduction of this improved sheep was the turning point in the sheep husbandry of the State, and we may add, of the nation. At first they were held so high and wool was so low that it was difficult to incite interest in them, but when wool rose in price and the numerous importations of 1810 and 1811 brought the sheep down from $1,000 and even $1,500 to $10, many farmers sought them and were enabled to get them, either in full or on shares. Large flocks were sent into the interior on speculation by the importers, and they became generally diffused over the State. But when prices fell so low, notwithstanding that fine wool always maintained its value equal to, if not better than, any other agricultural production, the speculative holders and dealers of the Merinos lost interest in them; consequently, many large flocks were broken up and destroyed. Some of the animals fell into the hands of small holders, some were allowed to cross on common sheep, while others went to the butchers or to the hogs. Such, in brief, was the history of the Merino sheep in New York, as well as other States, which, in 1809 and early in 1810, were valued from $800 to $1,500 each, and which were freely sold for $1 each in 1815. Notwithstanding the great losses suffered by some, mostly speculators, fortunately, the introduction of the Merino sheep into New York was of vast importance and bestowed upon her substantial and inestimable benefits. Over and above the intrinsic value was the attention it drew from the farmers to sheep husbandry, which is undeniably the foundation of all good farming.

It can not, however, be maintained that prior to the advent of the Merino sheep we had any system of sheep husbandry, nor did we have much to speak of until many years later. In New York, especially, which raised in 1820 about one-fourth of the sheep of the United States, this branch of rural economy, perhaps of more importance than any other to the State, was sadly neglected. With a few rare exceptions, near the large cities or where the farmers still clung to a few Merino sheep, the farmer had from twenty to fifty mongrel animals living at large upon the hundred acres of his farm, breeding promiscuously from their own wretched progeny and yielding a scanty return of perhaps 2 pounds of indifferent wool per annum a head; whilst to put all chance of improvement at the greatest possible distance the best lambs were

drawn from the flock to raise a little money, and the ewes which got fat earliest in the fall, and which were the ones that ought to have been kept for breeding, were turned off to the drover as though anything that was alive would do to keep over to replenish the stock.*

It was thought susceptible of demonstration that at least $5,000,000 were annually lost to the State by persevering in a breed of sheep which had nothing to recommend it. With very few exceptions this was the case in the other States, for they had none of the improved pure breeds anywhere, although as shown in a preceding chapter some were known in New Jersey and Pennsylvania as late as 1810 to 1815, and in 1820 Delaware, Pennsylvania, and New Jersey had a limited number of the mixed Leicester, and R. K. Meade was raising good sheep in Virginia. But in general, a farmer possessed of 100 acres would own—for it could be scarce called keeping—from 20 to 50 mongrel sheep, with the wool off half their backs; but they would yield him as much wool as was wanted for domestic uses, and they gave but little trouble, going into the neighbor's field at pleasure during the summer, and running in the barnyard with the rest of the stock during the winter. As these sheep lived on next to nothing they were owned as a mere convenience, supposed to cost little or nothing to maintain, and were placed at the very tail end of the economy of the farm.

The collapse of the woolen manufacture from 1815 to 1820 still further mixed the breeds of sheep. Wool being then of no consideration, flocks were not kept distinct, and every existing mixed breed was crossed and recrossed in every conceivable manner and with every conceivable result, to the great degeneration of all, for while the Merino cross improved the wool of the progeny it injured the mutton, if such a thing were possible, with the most of them. It was charged that the Merino injured the common sheep. But the Merino soon disappeared from most farms, either by being slaughtered outright, sold for a song, or gradually converted into a long-wooled sheep. In the vicinity of large cities the latter course was occasionally pursued, and an instance is cited.

One of the early and successful breeders of the Merino was G. W. Featherstonhaugh, of New York. He pursued the business with great zeal until 1818, when, after taking into consideration everything connected with their profits and those which they might yield ten years hence, he came to the conclusion which he had been anticipating some time, and parted with every Merino ram that he owned. The reasons, however, which caused this determination were principally applicable to those who, being favorably situated as to the best markets in the State, looked to carcass as a great source of the profit to be derived from sheep husbandry. The Merinos then having fallen in price to a level with the common sheep of the country, there was an end to every expectation of that branch of profit which had induced most purchasers

*Memoirs of the Board of Agriculture of New York, 1821.

to go into this breed, viz, the disposing of surplus stock at from $10 to $20 a head. And, if that expectation had not been entertained at first, he apprehended these sheep would have made very little progress in the country. The only advantage the Merino then possessed over the common sheep of the country was the higher price of the wool which its superior fineness always insured it.

Upon reviewing the facts which had transpired connected with his Merino flocks up to 1818, and which had been carefully observed, he became satisfied that after washing the wool well on their backs, removing everything like dirt from the fleeces and sending it perfectly dry to market, all of which precautions were found necessary to secure respectable purchasers, the average weight of the fleece did not exceed 2½ pounds of wool, which, sold at 70 cents (a high average price), would make the wool of each sheep amount to $1.75 a head per annum. A well-regulated flock of sheep increases so fast that it is necessary to keep it down, by thinning off annually to that number which the farm has the steady ability to keep in good order, which is usually done by selling on foot in the fall, or by butchering and sending the carcass to market. The last resource is an indifferent one for a large farmer. The Merino being a small animal, not exceeding, in 1818, 8 pounds to the quarter, when grass-fed in November did not look well alongside of other mutton; besides, there was a great prejudice against it, and nothing could be more troublesome than disposing of a large quantity of these sheep, in this mode, at a time of year when days are short and bad weather common. The other method was the most prompt and least disadvantageous. It being to the farmer's interest to keep young stock on hand, that which was matured was disposed of. A sheep which had given six fleeces was a proper subject to turn off, and it was considered that a flock of store Merino sheep at that age were well sold at $1.50 per head. Beyond that age the productiveness of these sheep when kept in quantities was past, for they failed very rapidly and their fleeces declined greatly in value. It was assumed then that the productive part of the life of the Merino was comprehended within the first six years and six months, and if then sold, according to the foregoing statement, six fleeces, at $1.75 each, and the sale of the animal at $1.50, would give $12 for the intrinsic value during its whole life.

From this sum must be deducted the charge of maintaining the animal during that period of more than six years. The winters in New York average about one hundred and thirty-five days of foddering, and actual experiment showed that seven healthy sheep during that time would eat a ton of hay, then valued at $7, leaving each sheep charged with $1 a head for wintering, independent of all the incidental expenses of attendance, fencing, expense of seeding down the land and other known incidentals, which would always bring an additional charge of 50 cents a head against them. Deduct then these two charges of $1.50

annually for six years and $3 would be left as the net profit upon each sheep for a period of six years, or 50 cents a year net profit. It can not be doubted that the experience of every breeder at that time, similarly situated, was of the same character. From which it would appear that a flock of 1,000 Merino sheep gave a return of only $500 per annum to the owner, net profit, which was a very inconsiderable sum, in view of the rent, risk, and anxious personal attention. These conclusions were familiar to our authority long before he had the courage to determine upon encountering the forbidden task of remodeling a large flock of sheep, and of changing a breed to which he was partial from the fineness of its wool, and from the remembrance of the great value it bore when he first engaged in it. No one but an extensive practical farmer can form an idea of the labor, care, and strict attention attending such an operation, particularly where the new breed itself was yet to be created. It was obvious, however, that the great defect in the Merino sheep, as concerned those near New York City or other large markets, was in the want of carcass. The object then was to raise a breed of sheep with a sufficient weight of carcass to insure the best prices in the large markets, and to have the wool of a sufficient degree of fineness to insure a prompt sale. Attention was turned, therefore, to the New Leicester sheep, remarkable for its weight of carcass and fleece, and to the Southdowns, a breed celebrated for a fine carcass with a moderate fleece of fine wool. But all attempts to procure these sheep from England failed, from the rigor of the laws which prevented their exportation. Recourse was then had to another breed which, by a happy accident, had been introduced into the State of New York. They were mixed Leicester and Teeswater, were only three in number on their arrival, but they fell into the hands of persons who knew their value, and had been judiciously and successfully increased in number. These sheep at a ripe age, rising three years, weighed from 25 to 30 pounds a quarter. The mutton was extremely fat, and by high feeding could be carried to 40 and 50 pounds. The fleece was rather coarse, but clipped 7 to 12 pounds when in condition, and was sometimes carried so high in Great Britain that entire flocks averaged 12 pounds per head. When breeders turned their attention to increasing the fleece the amount carried by these sheep was almost incredible.

But these mixed Leicester and Teeswater sheep were so few in number and held so high that it was impracticable to adopt them; it would have been an endless task to await the time required to form a large flock, and besides the wool was very coarse and not fitted for any sort of manufactures then prevailing. And the most experienced butchers admitted that the high prices given for some of these sheep was principally on account of the novelty of the breed, and to encourage the holders; but that mutton of 25 pounds a quarter was not likely to prevail in our markets, being too gross for genteel tables, and would probably never become a staple commodity among the laboring classes, who

were accustomed to pork, while in Great Britain those classes fed entirely upon fat mutton. The butchers almost all agreed that mutton from 15 to 20 pounds a quarter would be more profitable to the grower as well as the retailer.

Satisfied with this reasoning, Mr. Featherstonhaugh determined at once to procure some of the finest rams of the mixed Leicester and Tees-water breed and couple them with his Merino ewes. In this manner he hoped to raise the carcass of his flock from 8 pounds to 18 pounds a quarter, and still have a quality of wool on hand sufficiently fine to command a ready sale—a sort of half-Leicester, half-Merino wool. Accordingly, in the fall of 1819, he selected 200 very fine Merino ewes and had them tupped by some heavy English rams with moderate fleeces. The ewes lambed in March, and from the first the lambs were very much like their sires. The lambs increased in size the next summer far beyond the Merino lambs which had been dropped at the same time. In October most of them were even heavier than their mothers, having carcasses from 30 to 40 pounds. The next shearing time they averaged 4 pounds of wool a head, and among many of the best of them 5 pounds, clean washed on the back. The wool was equal to what was called average half-blood Merino wool, some much finer. It was all sold immediately for 50 cents a pound. This experiment was so satisfactory that the whole of the Merino rams were discarded and the breeding was done entirely from the best English rams obtainable. The ewe lambs dropped from this cross in 1820 had attained a fine growth in the fall of 1821, and in the spring of 1822 produced a crop of lambs three-fourths blood which, in November, 1822, were equally admirable for their size and even fineness of their fleece. The experience already gained led to the belief that a breed could be established that would be invaluable, yielding at three years of age 16 to 20 pounds to the quarter, and 6 or 7 pounds of wool of a long staple and equal in fineness to the ordinary half-blood Merino.

But not many farmers had the intelligence and means to convert a flock, and but few had the patience. Most farmers want their sheep made to hand with as little trouble to themselves as possible. Besides, but few sheep could be obtained from which to breed. The possession of breeding stocks became a necessity. There was an earnest demand for long-wooled sheep in New York and throughout the Middle States and Virginia. As early as 1810 the Alexandria (Va.) Gazette criticised the mania for Merino sheep as likely to lead to the neglect of the common or long-wooled sheep, which were needed for mutton and to furnish wool for the coarser manufactures, blankets and worsted, and at this time and subsequent thereto attention was called to the necessity of improving our common sheep, so called, both by careful selection and breeding and the importation, when practicable, of new blood; and that while our wool had been greatly improved by the Merino and crosses of it what was wanted was the Lincolnshire and Leicester for

blankets. In New England it was the same—the manufacturers wanted good combing wool, and it was very hard to find. One reason there was why the Merino breed had so monopolized the public attention that all other breeds had been allowed to run together; none were kept pure, and the wool was badly mixed.

The first well-established Leicester flock in New York is said to have been kept by Christopher Dunn, near Albany. Previous to the war of 1812 some ewes and a ram were smuggled from England by a Mr. Lax, of Long Island, and sold to Mr. Dunn. During the war of 1812 some very superior Leicester sheep, destined for Canada, were captured by an American privateer, sent into New York, and sold at auction. Mr. Dunn bought one of the rams at a very high price. He added fresh importations and selections and established a superior flock, which was kept up many years. In 1826 John S. Skinner imported a ram and two ewes of the New Leicester breed, and their weights have been preserved, as follows: 180½, 171, and 161 pounds. In 1831 D. Stockdale, of Murray, Orleans County, brought with him from England one ram and three ewes of the purest Leicester blood. In 1835 John Baker, of Wayne County, imported two rams and four ewes from the best English flocks, and William Hallock & Bros., of Ulster County, were the owners of a fine Leicester flock. Mr. Adcock, of Gilbertsville, had a flock of Cotswolds and Leicesters in 1836, and Mr. C. Dunn had also added some Cotswolds to his Leicester flock. By 1837 the Leicester was found in almost every section of the State, and their mutton was seen every spring in the city markets, where it surpassed all others for fatness.

But as early as 1836 the Leicester and Cotswold were so crossed and mingled in most flocks that, except to the practiced eye, the distinction between the two was lost. Some of the best flocks were those of Mr. Dunn and Mr. Wilkinson, of Albany County, Mr. Adcock, of Gilbertsville, and Mr. Clark, of Otsego, all of whom gave much attention to the Leicester. The average product of their wool was 5 to 6 pounds, though individuals were found carrying fleeces of 10 and 12 pounds. Mr. Dunn crossed the most of his flock with the Cotswold in 1834, 1835, 1836, and 1837, to improve the fleece and increase the size. His Cotswold ram was imported in 1832, and was perhaps then the largest sheep in the country, weighing 250 pounds, and giving at one shearing 15½ pounds of wool 14½ inches long. The cross of this ram on his Leicester flock increased the yield of wool one-fourth. Mr. Cowlen, of Cortland County, imported some superior Leicesters, and in 1839 had a yearling ram which gave 10¾ pounds of wool, and from 20 ewes he sheared 145 pounds of clean wool, or 7¼ pounds per head. Ten yearling rams gave him 97 pounds.

The Leicester sheep spread rapidly through the State, by sale and by the various crosses, and commanded good prices. At Rochester, in March, 1835, ram lambs 1 year old and under sold from $25 to $50;

rams more than 1 year old sold from $50 to $100, and ewe lambs $20 to $30. Southdown sheep were somewhat lower, while the Saxony and Spanish Merinos and other fine-wooled sheep sold from $25 to $50.

Some of these early Leicesters sold to the butchers for $20 each. Six furnished from the flock of Mr. Dunn when butchered weighed 810 pounds, an average of 135 pounds, and one fattened by Hallocks Bros., when killed in 1834 for the Poughkeepsie market, dressed 148 pounds.

Mr. John Wilkinson, of Duanesburg, sheared an average of over 6 pounds of wool per head from his Leicestershire flock, and in 1837 Mr. Dunn sheared 10 yearling rams, a cross of the Cotswold on the Leicester, of 100½ pounds of wool.

But the Leicester breed of sheep never proved a great favorite with a large class of the New York farmers. The long, cold winters, but more especially the dry, scorching summers, when it was often difficult to obtain the green tender food in which it delighted, together with the general deprivation of green food and roots in the winter, robbed it of its early maturity, and even of the size which it attained in England.

In 1823 Sidney Hawes imported some Southdowns, of which he sold 36 ewes, 2 rams, and 10 2-year old wethers to C. N. Bement, of Albany. Mr. Bement maintained his flock many years, and in 1836 had also a flock of good and well-descended Hampshire Downs. In 1834 Francis Rotch, of Butternuts, Otsego County, imported 6 Southdown ewes and 1 ram from the famous English flock of John Ellman. The ewes averaged 4 pounds of wool each, but it was for their unrivaled mutton that they were esteemed and became such great favorites throughout the State and the United States. In 1835 James Bagg, of Orange County, began importing Southdowns, and continued it for many years, selecting from the best flocks in Sussex, and disposing of his increase to every section of the State. In 1837 and 1838 Mr. E. P. Prentice, Mount Hope, near Albany, imported some sheep from the flock of John Ellman. These, with some Cotswolds, were sold to J. D. McIntyre, of Albany, in 1841, who had at that time as select a flock as any in the country. It numbered 64 Southdowns and Cotswolds and crosses. His Southdown fleeces averaged 4⅞ pounds clean wool, and his Cotswold fleeces 7¾ pounds. Mr. Rotch, of Otsego, continued his importations from the flocks of Jonas Webb, the Duke of Richmond, and the Ellmans, until it became the best in the Union. He imported also for others, among whom were Bishop Meade and Mr. Stevenson, of Virginia. An importation of 1 ram and 2 ewes for the former and the same number for the latter was made in 1841, and the weight of the rams were noted. Bishop Meade's 10-months-old ram weighed 248 pounds; Mr. Stevenson's, 254 pounds; and a 6-months ram lamb, bought by Mr. Rotch for his own flock, weighed 152 pounds. These were from Jonas Webb's flock, whose whole flock sheared an average of 6$\frac{15}{16}$ pounds each, the rams yielding from 9 to 11 pounds.

The Cotswold sheep began to attract attention about 1832, in which year Mr. C. Dunn imported a ram to cross on the Leicester. Up to 1837 they were but little known in the State. In 1840 William H. Sotham imported 19, for which he paid $110 each, and in the same year Erastus Corning and Mr. Sotham imported 25 sheep, a cross of the Cotswold and Bakewell, and said to have been as fine animals of the kind as were ever imported. These were from the flock of Mr. Hewer, Northleach, Gloucestershire, from which another importation of 50 to 70 head was made in the fall of 1840. Justus C. Haviland, of Duchess County, began the breeding of the Cotswold in 1836 and continued it many years.

The Cotswold sheep are natives of low calcareous hills, running through the eastern side of Gloucestershire, England, in a direction from southwest to northeast. In Gloucestershire these hills are of moderate elevation, not fertile, yet capable of cultivation, and yielding in the natural state a short sweet herbage. It was formerly a range of bleak wastes employed in the pasturage of sheep, and much of it was in the state of common; but with the progress of the last century the commons were appropriated and cultivation was extended. These hills were called the Cotswold, from the practice in early times of protecting the sheep during winter in long ranges of buildings, three or four stories high, with low ceilings, and with a slope at one end of each floor, reaching to the next, and by which the sheep were enabled to ascend to the topmost one. These sheds were called cots or cottes, and with the open hilly ground or woold, on which the sheep fed in summer, gave name both to the sheep and their habitat.

There is but little doubt that the original Cotswold sheep were, if not the earliest, at any rate one of the earliest breeds of sheep in England, and that they obtained a position unrivaled for the production of wool. Camden, one of the early English chroniclers, says:

> In these woolds (Cotswold) they feed in great numbers flocks of sheep, long necked and square of bulk and bone, by reason (as is commonly thought) of the wealy and hilly situation of their pasturage, whose wool, being most fine and soft, is held in passing great account amongst all nations.

Other writers refer to the excellence and abundance of the wools of the Cotswold. Drayton, who lived in the time of Henry VIII, contrasts the rich fleeces of Costwold with those of the flocks of Sarum and Leominster, and writers since that time have made similar references to the famous wool which for fineness "comes very near to that of Spain, for from it a thread may be drawn as fine as silk."

The precise character of the sheep which produced this wool is now unknown, as some contend. While Marshall, Youatt, and others consider that they have always been a long-wooled breed, many, including Low, incline to the opinion that they were probably similar to the large fine-wooled breeds of the adjoining counties of Berks and Wilts, a supposition agreeing with the locality of the districts and with "the long

REGISTERED COTSWOLD RAM.

necks and square of bulk and bone" ascribed to the Cotswold sheep by Camden.

It is difficult to reconcile these opinions, nor indeed is it necessary; the Cotswolds beyond the memory of our day have been a long-wooled race and valuable principally for their wool. They were large-framed, coarse, slow-feeding sheep; very hardy, and accustomed to travel in search of the short herbage which invariably prevails on limestone hills.

When Bakewell made his great improvement on the Leicester sheep in the middle of the last century his improved sheep soon extended throughout central England, and about 1780 crossed the Cotswold as well as the other long-wooled sheep of Gloucestershire, a system of crossing that was pursued so extensively that but a short time elapsed when there did not perhaps exist a single Cotswold flock which was not more or less mixed in blood with the New Leicester breed. It resulted in diminishing the bulk of body of the old Cotswold and lessening the produce of wool, but in giving to the animal a greater delicacy of form. About 1820, however, the Cotswold breeders thought that their flocks were declining in carcass and fleece and becoming less fitted for the climate of their native hills, and a preference set in for the native stock; crossing was generally suspended, and the former model of the breed adhered to.

The feeding qualities of the Cotswolds have been subjected to careful experiments by Mr. Lawes, who found that in comparison with Downs they consumed the least food to produce a given amount of increase, and made the greatest progress in a given time. The fat is principally external and the flesh is coarse and open. Under a liberal treatment, with good care and attention, fed on ground oats, dust oil cake, and followed by turnips, the lambs make great progress, and at eleven and twelve months old are fit for the English market, with a weight of 22 to 25 pounds a quarter.

These sheep, standing rather high upon the legs, and having grand heads, present an imposing appearance. Their fleeces are either white, gray, or mottled. White predominates, but slight variations neither indicate impurity nor detract from appearance. Mr. Coleman cites an instance where some years ago a flock of gray-faced sheep were bred, and at the annual ram sales every animal was more or less colored. For the purpose of crossing with the Hampshire ewe, gray-faced rams were preferred, the produce becoming darker in the face in consequence. The head of the Cotswold is large, wide across the forehead, the eyes full and prominent. The head should be well wooled, particularly the forehead and cranium, long locks hanging down over the face; if the eyes and upper part of the nose are covered, so much the better. The effect of the lovelock is pleasing and adds to the general good style of the sheep. The neck should be long and moderately thick, especially at the base and where it joins the head. The head should be carried

easy and high; the ram should so carry his as to be able to look over hurdle. The carcass should be long, level along the back, and the rib well sprung. The under lines are not so true and the flank is often weak. The greatest defect in the appearance of the Cotswold is the lightness under and the short space between hips and flanks. The Cotswolds are often too long, high, and lusty, and their height in such instances gives them a weak appearance.

The wool should be long, open, and curly. The staple is coarser and the weight of fleece is usually rather less than that of the Leicester and considerably under the Lincoln. In quality it is below both the Leicester and Lincoln.

In recent years many of these animals have been introduced into Australia, New Zealand, Canada, and the United States, as well as into France and Germany, to impart size and wool to native breeds. In the United States they are widely known and in general favor as a combined wool and mutton sheep. The American Cotswold Record Association has adopted the following:

Scale of points.

	Ewe.	Ram.		Ewe.	Ram.
Head	8	8	Fore flank	5	5
Face	4	4	Back and loin	12	12
Nostrils	1	1	Belly	3	3
Eyes	2	2	Quarters	8	8
Ears	4	4	Rock	2	2
Collar	6	6	Twist	5	5
Shoulders	8	8	Fleece	18	18
Fore legs	4	4			
Breast	10	10	Total	100	100

In October, 1836, Leonard D. Clift, of Carmel, Putnam County, imported some Lincolnshire sheep. One pair was sent to Virginia, one pair to Ohio, one pair to a gentleman of Somers, all at about $250 each pair, and 1 ram and 8 ewes Mr. Clift reserved for his own farm. More were subsequently imported, and in the spring of 1837 there was a shearing. Sixteen imported Lincolnshire ewes sheared 109 pounds of wool; 1 imported Lincolnshire 2-year-old ram sheared 10 pounds of wool; 1 imported Lincolnshire 4-year-old ram sheared 8 pounds of wool; 1 Leicester ram sheared 6 pounds of wool; 15 Leicester wether lambs, half-bloods, sheared 101 pounds; 25 Lincoln ewes, half-blood, sheared 153 pounds, and 6 half-blood rams sheared 42 pounds. The weights of his yearling rams were 188, 186, 180, 166, 156, and 185½ pounds. They had been kept only with a view to their thrifty growth. In 1840 Mr. Clift described his Lincolnshires as not over large, but carrying great weight for their compass of carcass. They inclined to early maturity and to lay on fat. Their skin was delicate and soft to the touch, and there grew on it a thick, long, and heavy fleece of wool, completely enveloping the whole body from the ears backward. In 1839, from 64

ewes he raised 92 lambs without the loss of one by exposure. A 4-year-old ram measured as follows:

	Ft.	In.
From nose to root of tail	4	7½
Height of fore shoulders	2	8
Height of rump	2	9
Breadth across shoulders	1	6
Breadth across loins	1	4
Girth around brisket and shoulders	3	10

Weight of clean fleece, 10 pounds.

The Cheviot sheep were introduced into Delaware County in 1838 by Robert Young, and in 1842 by George Lough and a Mr. Davison.

These various breeds of English sheep were crossed upon the common sheep of the country and upon the Merino and its grades to a great extent, the despised Merino during this period being of but little consideration. All these crosses went, however, to the perceptible improvement of the common sheep, both as to its flesh and its wool. It never entered into the mind of the farmer to improve his sheep in any other manner than by crossing. This, however, had an exception in the case of an English farmer by the name of Tonecliffe. He moved into Otsego County about 1815 or 1816, taking a few sheep with him. He selected his best sheep for breeding, and finally so improved them that he established what was thought to be a very superior breed, and in the course of twelve or fifteen years had such a reputation that farmers came from 50 to 100 miles to purchase what they supposed was a new English breed, "the Tonecliffe breed." The owner kept the secret for years, but finally said: "I can tell you where the difference has originated; when the butchers or drovers come to purchase sheep of you, you allow them to select, but when they come to purchase of me, I select for them."

To resume the progress of the Merino—Chancellor Livingston gives the weight of fleece of the original Spanish sheep as 8½ pounds in the ram and 5 in the ewe. The common sheep at the same time averaged about 2 pounds. From that time the march of improvement began both in the Merino and the native sheep. The introduction of the Saxons in 1825 to 1830 produced a weak race of sheep, which prevailed in the fine-wool districts until about 1840, when a reaction commenced, and people called to mind the great excellence of the old Spanish Merino. A change in the tariff laws, a modified condition of the wool market, and the increased demand for medium clothing wools also contributed towards the overthrow of the Saxons and the second start in the progress of improvement. The number of pure Spanish Merino sheep throughout the country was then very limited, and confined almost entirely to Vermont, Connecticut, Rhode Island, and New York. From these States the breeders and wool-growers of the country from Maine to the Mississippi drew very largely to either establish pure-bred Spanish flocks or to improve the cross-bred wool-growing flocks. Fortu-

nately for New York, she had preserved a few pure flocks, which have been noted; but there were only a few flocks of this kind, and those were small. Throughout the State there were few flocks that numbered over 200, and as a general rule the best were one-half to seven-eighths blood, and kept in the hill towns, where the pasturage was short. In 1841 Ontario County had 28,000, chiefly Merino and Saxon mixed upon the common sheep of the country. Tompkins County had lost all her extensive flocks through the unfortunate cross with the Saxons, and was again introducing the Spanish. Erie County was increasing in wool-growing, the Spanish Merino and grades predominating, though some long wools were coming in. Oneida had many fine flocks of Saxons and all the grades of them. In 1849 the prevailing races in Delaware County were the Saxon, Spanish Merino, and the Southdown. The Saxon gave 2½ pounds of wool, the Spanish 3 pounds, and the Southdown 3 pounds. At Buffalo in 1849 sheep husbandry had declined, because wool for two years past, since the passage of the tariff of 1846, had been so low as to afford the wool-growers but a small remuneration, and dairy farming had become more profitable. Very little wool was brought to the market (except from Canada) that did not show, to a greater or less extent, the effects of a cross with a fine-wooled sheep. It was difficult to define the sheep by any distinctive names. In particular sections sheep of pure Saxony and pure Spanish Merino, as also Southdown, could be found. Generally, however, the great mass of sheep were grades between the Saxony and Merino and the common sheep of the country. The weight of fleeces ranged from 2¾ pounds washed wool for Saxony and grades to 3½ for Spanish Merino and grades.

In 1842 Jesse Harron, Monroe County, sheared from 2 Merino rams two years' growth of wool which weighed 23 pounds 13 ounces, and one fleece from a ram of one year's growth which weighed 10 pounds. In the Genesee Valley the average Merino fleece was 3 pounds 4 ounces, washed on the sheep's back. Mr. Wadsworth had several thousands, and the Shakers at Groveland, Livingston County, a considerable flock. In 1845 the Spanish Merino flock of J. Speed, near Ithaca, averaged 5 pounds of clean-washed wool per head. In the same year R. R. and L. G. Collins, Otsego County, from 65 full-blood Spanish Merinos sheared 304 pounds of wool, averaging within a fraction of 4 pounds 11 ounces per head. Twenty-three were yearlings and averaged 4 pounds 14 ounces. The sheep were well washed. In 1844 Henry S. Randall received the premium for the best-managed and most profitable flock in the State. In 1845 Mr. Randall sheared from his Paulars an average of over 6 pounds well-washed wool. A three-year-old ram sheared 13 pounds 3 ounces, and a yearling 8½ pounds of unwashed wool. Many ewes sheared 6, 7, and 8 pounds; 1 sheared 9 pounds and 1 ounce. In 1846 Mr. Henry S. Randall's flock averaged over 6 pounds of well-washed wool. Some of the ewes ran to 8 pounds, and 1 to 9 pounds 2

ounces. A three-year-old ram sheared 13½ pounds. In 1847 Col. John M. Sherwood's flock at Auburn, mostly Blakeslee sheep, were shorn. Sixty-four rams sheared 340½ pounds of clean-washed, well-tagged wool. Forty-four were yearlings, 11 were 2 years old, and 9 were older. The average was $5\frac{5}{16}$ pounds each. The Blakeslee ewes, 110 in number, sheared 443½ pounds of clean-washed wool, or an average of 4 pounds 1½ ounces each. This wool was very fine and even and commanded the highest price. At a shearing in Madison County in 1849 B. P. Chapman sheared from 12 sheep 86¼ pounds of wool. The highest fleece was 13 pounds, from a ram that after shearing weighed 160 pounds. At Chautauqua the same year native sheep gave 2½ to 3 pounds of wool, Spanish Merinos 3 to 4 pounds, and Saxons 1¾ to 2½ pounds. Mr. J. D. Patterson had a flock of 550 pure-blooded Spanish Merinos that sheared an average of over 5 pounds of wool each. He also had a pair of French Merinos 1 year old. The ram sheared 14½ and the ewe $10\frac{13}{16}$ pounds washed wool.

In 1845 and 1846 there was a slight revival, in some sections, in favor of the Saxony Merino, and some new blood was infused into existing flocks and a few pure-blood flocks started; but the tariff of 1846, by crippling the fine broadcloth manufacture, stopped the tide in that direction; thousands of Saxony sheep were slaughtered for their pelts and tallow; and in 1850 the New York Agricultural Society reported that the pure Saxons were declining in favor among the wool-growers. This was attributed to the low price of fine wool for the few years preceding and the smaller quantity produced by this family than from some others. This idea having become prevalent with many breeders of the pure Saxons, they neglected to keep up the quality of their flocks, so essential to the profitable growing of fine wool, and either suffered them to degenerate or merged them with other families. The flock of S. H. Church, Vernon, Oneida County, celebrated for the superior quality of wool and the fine symmetry of the sheep, clipped in 1850 an average of 2¾ pounds of wool; and Joseph Haswell, of Hoosick, Washington County, whose flock numbered 800, succeeded in bringing them up to 3¼ pounds without impairing the quality of the wool. But the difference realized in the price received did not compensate for the lighter fleece, and it was less profitable to raise it than the Spanish Merino. In 1845 there were 72,000 Saxons in Seneca County; in 1850 but 35,000, and the decline was similar in all parts of the State.

Nor was the decline in fine sheep confined to the Saxons alone. Wool-growers located in the vicinity of large cities and towns, who had up to 1845 and 1846 bred both Saxony and Spanish Merinos, then began to change their flocks for large-framed, coarse-wooled sheep, whose carcasses were valuable for mutton, and they derived a greater profit from the Leicester, Southdown, and Cotswold sheep and their crosses with the common and other breeds, by the sale of mutton and wool, than from the sale of wool alone from the finer grades of Saxony and Merino.

This system prevailed to a greater extent in the eastern part of the State than in the western. In the latter part the most enterprising wool-growers bred the Saxony and Merino and their crosses, and produced wool varying from 2½ to 5 pounds per fleece. But throughout the whole State sheep husbandry was on the decline. Causes other than the tariff were also operating. The great West was being opened up and settled, and many flocks were driven there where land was cheap. The extraordinary profits of dairying and the prospect that they would be continuous displaced the sheep on many a farm. From all causes the number of sheep, which in 1840 was 5,118,777, yielding 9,845,295 pounds of wool, and which had increased in 1845 to 6,443,865, yielding 13,864,828 pounds of wool, fell in 1850 to 3,453,241 sheep, yielding 10,071,301 pounds of wool, and the decline has continued to the present day.

In 1850 and following years the Saxon blood was crossed out of many flocks, but it was observed that after the breeders had discontinued the use of Saxon rams they never could get their sheep back to what they were originally before the infusion of the Saxony blood. John D. Patterson, of Chautauqua County, had a flock of 800 pure bloods of Spanish origin and a few French Merinos. A yearling ram, the first cross of a French Merino on the Spanish, sheared 9½ pounds of unwashed wool, and some yearling ewes of the same cross 6 to 9¾ pounds of fine, clean-washed wool. From this flock the French Merino and its crosses found their way into the adjoining counties and into Pennsylvania, Ohio, and the States still further west.

Wool-growing was not profitable in 1850, but growers continued the business, hoping for better times and higher prices; many, however, sacrificed their fine-wool flocks for mutton sheep, offering pure-bred Merinos at a very low figure. A flock of 40 rams and 100 ewes, descended from the flock of J. N. Blakeslee, was offered at $10 for the rams and $5 for the ewes. The average yield of wool per head was 4¾ pounds. About 1851 prices were better, and the industry partially revived. Spanish Merinos were again sought after, and the French Merino was looked to as promising a large carcass with a heavy fleece of fine wool. Monroe County reported many good, fine-wooled flocks that averaged 4 to 5 pounds of wool; the cost of production small, as, like cattle, they were fed on what would have been otherwise wasted. Lambs paid all expenses, and the Merino was most profitable both for mutton and wool. In Steuben County nine-tenths of the sheep were Spanish and Saxon Merinos and their grades, yielding 3½ pounds of wool per head and consuming annually 300 pounds of hay each. In Seneca County the sheep were mostly Merinos, yielding 3½ pounds of wool, and there was an improvement in the blood by the introduction of rams from Vermont. In Ontario County the sheep were of almost every grade from the finest Saxony to the coarsest native.

Of the Spanish Merino there were choice flocks yielding fleeces from

4 to 5 pounds. Southdowns had multiplied largely during the three years preceding, and there were some Leicesters, but these were deemed too tender for the winter storms and were crossed with the more hardy Merino and Southdown. The tendency was for larger sheep. Formerly wool-growers entertained the idea that to grow fine wool they must keep small sheep, but they now began practicing on the theory that by selecting from the best flocks the largest and finest rams and ewes they could improve both the size of their sheep and the quality of their wool. In Allegany County by 1854 the French Merino had become a great favorite, and of these and the pure-bred Spanish Merinos there were quite a number. Since the introduction of the French Merino, in 1849, they had increased the weight of the fleece on an average nearly or quite 2 pounds in the flocks where used. There was, however, a growing interest in mutton sheep, for the improvement of which the Southdowns were being introduced. Sheep were kept in pasture seven or eight months and the remainder of the year on hay or straw. Good wool could be produced at less expense of keeping and labor than poor, as the fleeces were heavier. The tendency in the western counties was toward sheep for mutton and wool combined. This tendency was still more marked in the eastern and northern counties. In Delaware County wool-growing and raising lambs for market returned the greatest profits, though the owner of a fine Merino flock, which averaged 5 pounds of well-washed wool per head, could at a cost of 25 to 30 cents put it on the market. In the extreme northern counties of St. Lawrence, Franklin, and Clinton less attention was paid to raising sheep than of cattle. There were a few flocks of full-blooded Spanish Merinos which would not in any respect suffer by comparison with the best flocks of Vermont, but the description most raised was a grade of the Merino on the common or native sheep. For the purpose of mutton, here a leading object, this grade answered a good purpose. This section had Leicesters, Southdowns, and Cotswolds, mostly from Canada, and were quite popular, but of the mutton sheep the large natives were the most profitable for carcass and wool. Their flesh was considered better and they took on tallow more readily. They were more hardy and their increase could be relied on. One hundred hardy, coarse-wooled ewes would raise 100 lambs when the Saxon would raise 25 and the Spanish Merino 50, each having equal care. The Saxon sheared 2½, the Spanish Merino 3½, and the coaser varieties 5 pounds of wool.

The decade from 1850 to 1860 was noted for the substitution throughout the State of coarse-wooled sheep for fine-wooled, the rapid elimination of the Saxon from the fine-wooled flocks, and the spread of the French Merinos in the western counties. The total number of all kinds decreased from 3,453,241 in 1850 to 2,620,920 in 1860, a loss of 832,321 sheep and 616,828 pounds of wool. But the average yield of wool per head increased from 2.91 to 3.60 pounds.

The elimination of the Saxons from the sheep husbandry of New York was accompanied by a heated discussion. There were those who contended that they were a hardy sheep, and that the failure to make them profitable was largely due to the want of care and general careless manner of breeding. A noted breeder of Oneida County sums up the record of the case in his own experience. He had been raising sheep over twenty years, having a small flock 100 to 200 originally of grade Merinos, half blood. From this flock, without change except by judicious breeding and the use of Saxon rams, he produced a flock yielding about 2¾ pounds of fine wool. After thorough trial he became convinced that, although producing fine wool, he was not increasing the real value of the flock; the improvement in the quality of the fleece being attended with a proportionate diminution of the quantity, so that while he was enabled to obtain an advanced price per pound for a given number of fleeces, the aggregate value had in reality decreased in consequence of the decrease of weight. He also found the animals to be less hardy, less able to withstand the great changes of our variable climate, and, consequently, much more subject to disease. A change, therefore, seemed to be necessary. This was sought to be effected by the introduction of the pure Spanish Merino blood, and for ten years rams of that description were used to the exclusion of all others and to great satisfaction, bringing back the flock to medium-sized sheep, compact and symmetrical in form, perfectly healthy in every respect, and yielding per head an average of about 4 pounds of fine Merino wool, of good length of staple, uniform in quality, not overcharged with yolk, and showing in opening a good crimp and luster. With the Saxony sheep the average annual loss from disease and other causes amounted to nearly 10 per cent.

After the change made in the course of breeding the average annual loss did not exceed 2 per cent, and that arising mostly from accidental causes. This seemed to be convincing that in that county (it being on a range of land in latitude 43°) the Spanish or French Merino sheep were preferable to the Saxony, if wool-growing was to be made profitable. The principal benefits found to result from the change were: An increase in the average weight of fleece from about 2½ to nearly 4 pounds; getting a close and compact fleece, comparatively impervious to the weather, and thus furnishing a more perfect protection to the body of the sheep from wet and cold, consequently a more firm and vigorous constitution; and, in consequence of the preceding, better breeders and better success in rearing lambs. The only offset was in the quality of the wool. A few figures demonstrate whether, in a pecuniary point of view, there was actually any loss:

2¼ pounds Saxony wool, at 56 cents	$1.40
4 pounds Spanish wool, at 44 cents	1.76
Difference in favor of Spanish	.36

On the other hand there were good showings for the Saxons. Solomon Hitchcock, of Livingston County, had been a wool-grower since 1834, and admitted with all the prominent wool-growers of his day that sheep consumed food in proportion to their own weight, and also (other circumstances being the same) that it required an equal amount of food to produce a pound of wool without regard to the size of the sheep. So, after having the weight of the fleece and its value per pound, it was necessary to have the weight of the living animal from which to calculate the cost of growing the fleece before the profits could be determined.

In 1846 Mr. Hitchcock became convinced in his own mind that as many pounds of Saxon wool from ewes weighing about 62 pounds each (the common weight of a full-grown Saxon ewe) could be raised on 100 acres of land as could be grown on the same of Merino wool from ewes weighing about 88 pounds each (about the common weight of a full-grown Merino ewe). Rams, wethers, and younger sheep of each herd would weigh in the same proportion to each other as the ewes. With the view of testing this by experiment he purchased 4 ewes and 5 rams from the Saxon flock of Thomas W. Swift, of Dutchess County, and 13 ewes from another flock descended from Swift's. These sheep, collectively considered, had no superior for symmetry, quantity, and quality of fleeces. It is true that they were not so large as Merinos, but this was thought to be of little consequence when it was considered that 100 pounds of the Saxons produced the same amount of (equally clean) wool as the same weight of Merinos, and that it cost no more to keep 100 pounds of one than of the other. Mr. Hitchcock made a painstaking experiment and gave the result to the public through the columns of the Genesee Farmer.

One week after washing he sheared an equal number of Saxon and Spanish Merino ewes, selecting them so that they should not differ in age, or condition, or in wastage of their wool by cleansing. He weighed these selected sheep and their fleeces immediately after they were shorn and found that the Saxons gave 1 pound of wool for every 18 pounds of their live weight, and that the Spanish Merinos gave 1 pound for a fraction less than 19 pounds of their live weight. The average weight of the Saxons was 63 pounds; the Spanish Merinos, 72 pounds. The Saxons were rather above the medium weight of the flocks from which they were selected. The Spanish Merinos were weighed at a time when they were, perhaps, lighter than at any other season of the year.

Besides the above a number of other Merino ewes were weighed, some of which went from 90 to 100 pounds; but in every case it was found that it took from 18 to 19 pounds live weight to produce a pound of wool. The Saxon Merino wool had a market value of 50 cents per pound, the Spanish Merino 35 cents per pound.

Accepting the proposition that these two kinds of sheep consume food and shear clean wool in proportion to their own weight, then the farmer keeping 400 Spanish Merino sheep (the young and old of which

average 65 pounds) could on the same feed keep 472 Saxons of same age averaging 55 pounds. The gross weight of each flock is 26,000 pounds. Allowing 1 pound of wool to every 18 pounds live weight would be 1,444 pounds.

1,444 pounds Saxon wool, at 50 cents per pound	$722.00
1,444 pounds Spanish Merino wool, at 35 cents per pound	505.40
Difference in favor of Saxons	216.60

The papers of the State and of other States were full of similar statements, but nothing could prevent the condemnation of the Saxons; the weight of the testimony seemed to be against them.

With the disappearance of the Saxony was the advent of the French Merino. These sheep, introduced into Connecticut in 1840 and 1846, and into Vermont in 1846, 1847, and subsequent years, found their greatest New York admirer in 1848 in the person of John D. Patterson, Westfield, Chautauqua County. Mr. Patterson made his first importation in 1848, and continued the increase of his flock by annual importations for many years. In 1853 he purchased 1 ram from the celebrated flock of M. Cugnot for $600, also 2 rams from the flock of M. Gilbert for $400 each. Mr. Patterson's earlier importations were described as unusually large for fine-wooled sheep, the ewes when of full age and in good condition weighing from 120 to 150 pounds each, and some of the rams over 300 pounds each. Their wool was of good quality, though not equal to Saxony for fineness nor up to the standard of the Spanish Merino. The wool was thick and compact, covering their entire bodies, thick and long on their bellies and legs, and their heads and faces sometimes so completely covered as to blind them, and unless sheared away frequently injured their sight. His imported ewes sheared 15 pounds each on the average, of one year's growth, in a perfectly natural condition, or unwashed, and some of his rams sheared much more. They were prolific; a good portion of the ewes had twins, and as they were good mothers there was no difficulty in raising their lambs, and the flock raised 50 per cent more lambs than there were ewes in it. In 1853 Mr. Patterson had many half and three-quarter French bloods, and he found that the larger the infusion of French blood the larger the sheep and the greater the increase in the weight of fleece.

F. M. Rotch, of Otsego County, who imported some of the French Merinos in conjunction with Mr. Taintor in 1851, considered those of the first class as a superb sheep, but they varied greatly. In his opinion they were not suited to the American style of rough farming. Though a vigorous, good constitutioned, and hardy sheep, they were accustomed to so much care and watchfulness in their native land that they were unable to endure the rough-and-tumble style of much of our farming. The north side of a barn or the lee of a rail fence for animals that had been housed every night in the year at home was too much of a change. With proper care they were able to endure even our vicissitudes of climate,

and thrive and grow fat here as in France; but, like all improved breeds of domestic animals, it seemed folly to expect them to do well without care or feeding. Any animal brought from a state of high cultivation and a mild temperature to a colder climate and poorer soil will deteriorate, unless extra pains are taken to supply the loss of care and counteract the change of food. The same care given them as in their own country showed that they would thrive and breed and shear and weigh as they did there, almost. The long winter and the necessity of feeding dry food so many months told upon them somewhat. As a cross upon our usual type of Merino, Mr. Rotch considered them very valuable, but quite unfit for the general use as a stock sheep of our farmers at present. With a better husbandry and improved shepherding they may one of these days take their place among us as a breed, but now their crosses are what we must look to.* Mr. Rotch sold his French flock to John D. Patterson in 1856.

Mr. E. L. Gage, of De Ruyter, commenced breeding French Merinos in September, 1852, his first purchase being of Mr. Taintor, of Connecticut. Subsequent purchases were made of Mr. Patterson and Mr. Rotch. His statement as to their management, made January 2, 1862, was published by Henry S. Randall in his "Fine-wool Sheep Husbandry."

Forty is the most we had at any one time. The average weight of the ewes' fleeces was 10 pounds 8 ounces, well washed. In addition to hay in winter, we fed them about a pint of a mixture of grain and roots each per day. We also feed a small amount of grain in summer to attract them to the barn at night for their safety from dogs. They were always kept housed in winter except on clear days, when they were allowed to go out or in at will. They were also allowed to go into the shed at will in summer. The French Merinos always afforded us good returns in wool and lambs. The ewes were good nurses, often bearing twins. One full-grown ram weighed from 180 to 225 pounds; the ewes from 125 to 170 pounds.

Mr. Gage sold his flock to Mr. Patterson in February, 1861, and commenced a flock of pure-blood Spanish Merinos of the Atwood and Hammond stock, believing them to be the most profitable for all classes of wool-growers, and more easily kept in better condition on short keep and rough usage.

William Chamberlain, of Red Hook, Dutchess County, imported 3 rams and 86 ewes of the French Merino breed in 1851, and in 1853 and 1854 imported two small lots of about 30 each. The shearing record of 5 ewes in 1856 is here given:

Weight of carcass.	Weight of fleece.
Pounds.	*Pounds.*
73	14
71	14¼
69	12½
72	13¼
70	13¾

*Letter of F. M. Rotch, January 13, 1862, in "Randall's Fine Wool Sheep Husbandry."

The acquisition of the Rotch flock in 1856 and of the Gage flock in 1861 made Mr. Patterson's flock the largest and best French Merino flock in the State. In January, 1862, he furnished Mr. Randall a full and unreserved account of it and what it had been, which will not bear abridgment, and is herewith given:

It would be difficult to give the characteristics of these various importations of sheep, as there has been so great a difference in them, they having been of all kinds and qualities, from good to very inferior. Some of them have been of large size, were well proportioned, being short in the leg, broad in the chest, had strong, hardy constitutions, were easily kept, and always in good condition. With ordinary care and on ordinary feed they sheared heavy fleeces, and their wool was even and of good quality; while others of them, and by far the greatest number, were the opposite of these in all the different qualities mentioned, some having been the discarded and refused sheep of good flocks, and others were grade sheep from flocks having no reputation as being of strictly pure blood; but these kinds of sheep were bought up by speculators at low prices, brought to this country, and sold on the reputation and credit of the better class of French sheep that had been previously imported. They were long in the leg and long in the neck; were slab-sided, thin-visaged, gaunt, thin through the shoulders, narrow in the chest; their constitutions so puny and delicate that it was impossible to keep them in fair condition, even with the best possible care and attention; their fleeces were light, their wool uneven in quality, some being quite too fine for profit (because too light), while others would be exceedingly coarse and filled with jarr. In France, as in this country, there are all descriptions and grades of sheep, and it does not follow, as is supposed by many, that all that have been imported from there are of the same kind and quality, even if called by the same name. My French rams have generally sheared from 18 to 24 pounds of an even year's growth, and unwashed, but some of them, with high keeping and light use, have sheared more, and my yearling rams have generally sheared from 15 to 22 pounds each. My breeding and yearling ewes have never averaged as low as 15 pounds each, unwashed, taking the entire flock. Some of them have sheared over 20 pounds each, but these were exceptions, being large and in high condition.

The live weight of any animal of course depends very much upon its condition. My yearling ewes usually range from 90 to 130 pounds each, and the grown ewes from 130 to 170 pounds each, and I have had some that weighed over 200 pounds each; but these would be above the average size and in high flesh. My yearling rams usually weigh from 120 to 180 pounds each, and my grown rams from 180 to 250 pounds each; some of them have weighed over 300 pounds each, but these were unusually large and in high flesh and in full fleece. I have had ram lambs weigh 120 pounds at 7 months old, but they were more thrifty, fleshy, and larger than usual at that age.

As you request the height from the top of the shoulders to the ground, I have measured some of those of medium height, and find that yearling ewes run from 26 to 28 inches, the grown ewes from 28 to 30 inches; the yearling rams from 28 to 32 inches, and the grown rams from 30 to 34 inches.

When running out and exposed to the storms they are as a whole, light colored when compared with the Spanish Merinos, for the reason that they have much less yolk or gum in their fleeces, besides their oil or yolk is more of a soap-like substance, and separates from their wool so readily that the rains will wash their surface comparatively clean, leaving them light colored, while the oil or gum of the Spanish merino is so adhesive and sticky it is difficult, and in many of them impossible, to wash it out of their wool by ordinary brook washing; and as it is the yolk or oily matter contained in the fleece (causing the dust and other matter to adhere to it) which gives the external color, the Spanish Merinos are generally darker on the surface than the French; and it is this excess of oil in the Spanish Merino which causes

HAINES, DEL.

FRENCH MERINO RAM, LOUIS PHILIPPE.

ONE YEAR OLD.

FROM "N. Y. AGRICULTURAL REPORT," 1848.

HAINES, DEL.

FRENCH MERINO EWE, MARQUISE DE ROUGE.
ONE YEAR OLD.
FROM "N. Y. AGRICULTURAL REPORT," 1849.

their fleece to lose so large a percentage in weight when cleaned for manufacturers' use. Experiments made with the two kinds of wool by reliable and experienced manufacturers have proved that as much cloth can be made of the same number of pounds of unwashed French Merino wool as can be made of an equal number of pounds of brook-washed Spanish Merino wool in the condition it is usually sold.

Their wool is generally of a cream color, or has a yellowish cast, and the oil or yolk in their fleece is a similar color; still, when washed their wool is of a pure white. The wool of some of the French sheep is naturally quite white when opened on the body, without being washed, but I have invariably found those having the whitish wool (when alike in other respects) were the lightest shearers.

Regarding the cross between the French and Spanish Merinos, Mr. Patterson had succeeded beyond his expectations. Indeed, as a wool-growing sheep in the hands of most farmers, and to be kept as sheep are generally kept throughout the country, he had never seen a stock which he thought as profitable, both for wool-grower and manufacturer. He had bred them since 1848. Most of the time he had more of this kind than all others, although he always kept a flock of pure Spanish and always put French rams to French ewes, making his cross by putting French rams to his Spanish ewes, not that he thought that principle of breeding the best, but it cost much less money to do it. And while this cross with him resulted in a very profitable wool-growing sheep, he could also say that he had seen crosses from these long-legged, slab-sided, narrow-chested French rams as miserable and worthless as could be imagined.

There were other importers and breeders of French Merinos in New York and they spread with great rapidity, but obtained no strong foothold and disappeared rapidly.* In a short time no sale could be found in the State for the increase of the flocks. Some were sold to breeders in Washington County, Pa., and many found their way into Ohio, northern Illinois, and southern Michigan, where they did better than in New York. Among those from Michigan who purchased of Mr. Patterson was Mr. Stanton, of Oxford, who bred his purchase pure until his death, when the flock was purchased by Mr. S. Cooley, of Oakland County, who bred them with great care and to a marked improvement. The flock is now (1892) in possession of Mr. Henry Grinnell, of Oakland, and forms the foundation of the American Rambouillet Association of Michigan, and will be noted at more length when the sheep of that State come under review. In 1859 Mr. Patterson took 30 rams and 22 ewes to California, where they were highly appreciated. He sold 3 rams at $1,500 each; 1 at $1,000; 2 at $800 each, and 18 from $700 down to $300 each. Fourteen ewes were sold for $4,500, or an average of $321 each. Mr. Patterson subsequently disposed of his entire flock in California, and by 1870 it was a matter of doubt whether there was a single pure-blood or even high-grade French Merino in New York, or in fact in any of the Northern or Eastern wool-growing States, and among breeders a French cross in a Merino pedigree, though ten generations back, would be esteemed a fatal taint. "Never," says Dr. Randall, "did a breed of

animals shoot so rapidly into favor, and disappear so rapidly and under such general contempt. We thought it went to an extreme; that under certain circumstances something useful could have been made out of crosses with these sheep." They were introduced especially as a wool-growing sheep. They were wholly unused to a climate like ours, and wholly unsuited by their previous management to the American system of wool-growing. They required more shelter from vicissitudes of weather, more care in all respects, more and better feed than anybody then thought of giving to American Merinos. French management had converted them into mutton sheep by forcing them as English mutton sheep are forced; and when this management was abandoned in the United States, where they were put on scanty pasturage, or pastures rendered dry and innutritious by our scorching summers, and confined to dry hay, or that with a mere modicum of grain in winter, they did not of course receive sufficient sustenance to build up and support their great frames. The result was precisely what it would have been with the large mutton sheep of England, suddenly subjected to such a change of temperature and feed. A few breeders who understood the thing better kept up the forcing and kept up their sheep. But the mass treated them as they had been in the habit of treating the American Merino—or not much better—and they perished like hot-house plants exposed to frost. Their progeny was gaunt and unthrifty and rapidly dwindled in size; and when it was found out that they produced considerably less wool for the amount of food consumed, and that their wool was no better than first-class American Merino, the edict for their extermination went forth.* It was conceded, however, that this sheep materially increased the weight of many flocks in western New York.

The Silesian Merino closely followed the French Merino into New York. Like the latter it originated from the Spanish Merino. The native sheep of Silesia were small with long neck and legs, and the head, the body, and the legs devoid of wool. In some districts there existed a superior breed, so far as the wool was concerned. They were never folded; they were housed at night even in summer; the sheep houses were badly ventilated, and the excrement removed from them but twice in the year. Lasteyrie tells us that when Count Von Magnis retired to his large estates at Eckersdorf, in 1786, he had 3,000 sheep, the gross return from them amounting to about $912—American money. He began experiments to improve these sheep by crossing them with the large breeds of Hungary. His success was not marked and he had recourse to the Merinos, sparing no expense in order to procure the best rams. He labored hard to produce an artificial pasture on a tract of country that would hardly produce an indigenous plant, for, on scarcely any part of his estates would the rigor of the climate permit any pasturage during six months of the year. As his power of supporting his sheep increased, he increased their numbers. In process of time the

* Henry S. Randall in Rural New Yorker, 1870.

wool yielded by the greater part of his sheep would bear comparison with that found on the best sheep of Spain, and at length exceeded it in fineness and value; and in the course of a few years his returns were multiplied more than twenty-fold.

Mr. J. G. Elsner, in his history of Silesian sheep, giving an account of the origin of nearly 300 Silesian flocks, leaves the impression that the Silesians are a cross between the Negretti of Spain and the Electorals of Saxony. Under the head of "History of some flocks which were founded from the so-called Negretti and Electoral Merinos" he describes the Lichnowskyan flocks. The sheep forming the original fine-wooled flock of the Duke of Lichnowsky were descendants of the original importation of Spanish sheep at Holitsch and Mannusdorf. His flock was a private one, and located near Troppau, in Silesia. The type of his sheep was Negretti-Infantado. The wool was very strong, containing a large quantity of grease; the body, barrel-shaped; the head well covered with wool, and folds around the neck; wool covering the limbs well down towards the extremities; the skin of a deep rose color—these are the main characteristics of the type. At that period sheep were esteemed valuable in proportion to the many folds they had on the neck and body, and that became the prevailing type in Moravia, Austrian and Prussian Silesia, and adjoining provinces.

In 1801 the Duke Lichnowsky traveled in Saxony, where he discovered that the Saxony Merino had many desirable qualities which were not possessed by his own flocks. At about the same time the fine, soft, Electoral wool was very much sought after throughout all the Austrian and German states. The flock owned by the Duke had been very carefully bred and selected, and had many desirable qualities of which the Electorals were destitute. He concluded to combine the two types and thus secure the desirable qualities of both. He quietly secured one of the most highly prized rams of Saxony origin, and the progeny of this ram, bred to the Merino ewes of Silesian parentage, were all that the most sanguine could expect. Soon after he procured a second ram, and in a very short time sheep of these crosses were in great demand as breeders; he furnished them to other sheep-raisers as far as prudence and the interests of his own flock would permit, and from this commencement has grown one of the types of sheep known throughout the world as Silesians.

Another celebrated Silesian flock was that of Gross Herrlitz. The domain of Gross Herrlitz was the property of the Duke Eugene of Ubrna, in Troppau, Silesia, and in 1842 was in possession of the oldest Merino flock in this region of country, and which must be classed with the first flocks of Germany; and this flock has furnished more improved breeding ewes and done as much, if not more, than any other to disseminate and encourage the growth of fine wool. The history of this fine flock is thus briefly told:

In the last quarter of the preceding century there was great attention paid to fine wool, and many sheep from the best flocks in Spain were introduced into Austria.

Being interested in the progress of agriculture, the then premier, Duke Kaunitz-Rittberg, by an especial favor of the Spanish court, obtained a flock of the very best wool-growers in Spain, and placed them on his estates in Jarmintz, Moravia. The mother of the then owner of the Herrlitz estates was a daughter of the premier, and wife of Duke Eugene of Ubrna, who was the owner of the large family estates in Herzovitz, in Bohemia, and fell heir to a portion of the original flock imported from Spain. This inherited portion was taken to the Bohemian estates ostensibly in order to improve the Bohemian flocks, but really to form the nucleus of a large flock of the very best wool sheep in the Empire. This nucleus was composed of Negrettis and Infantados. The flock at Herzovitz has been kept pure from the first "Kaunitz" sheep landed there, but in order to increase the flock rapidly additions were made from the flocks at Holitsch and Mannersdorf; and at the commencement of the present century a portion of the Herzovitz flocks were sent to the estates at Gross Herrlitz, and increased by additions of bucks and ewes from Herzovitz until the year 1820.

Gross Herrlitz, by its topographical and agricultural position, lying at the base of the Sudete Mountains, is admirably adapted for sheep and wool growing. In a short time after the removal from Herzovitz, it was found that the physique of the flock was undergoing a gradual change—the bodies became larger, with broad and powerful frames. The entire body was covered with a thick and heavy fleece, the wool was nervous, even, and somewhat heavily gummed, but could very readily be distinguished as the Saxony wool of Spanish origin. Thus encouraged, the proprietor spared neither pains nor expense to obtain this end, to bring his flock to the very greatest perfection, and as a means to obtain this end, in the year 1805 he purchased 55 ewes from the old Jarmeritz stock, and in 1816 purchased 3 bucks from Hoschlitz; this latter, at the time had the reputation of being the finest flock in Moravia. By the year 1820 the flock at Herrlitz had become so consolidated and equal in the hereditary transmission of qualities that breeding animals from it were in the greatest demand—although it was then very far from its present development. But in order to attain the highest possible development of strength and fineness of wool and evenness of fleece, the proprietor made annual purchases until the year 1827 of the best bucks from the Lichnowskyan flock. Since 1827 the Herrlitz flock has been carefully bred in-and-in, so that all the characteristics of form and quality of wool are now permanently fixed.*

The Merino sheep originally imported into Silesia were pretty nearly of the same blood—large vigorous animals with a strong elastic wool. Although the blood was pure and the character of the wool excellent, the limited number with which they commenced the Silesian flocks did not conduce to a rapid progress in their increase and improvement. The shepherds intrusted with them were ignorant of the proper mode of treatment, consequently the animals, like the native breed, were neglected and permitted to shift for themselves. The few samples existing from these first Merinos in 1845, when compared with wool of the best breed at the latter date, showed how great had been the improvement.

The estate holders and farmers of Silesia crossed, with great success, their native flocks by rams of these first Merino flocks, and the fact that rams with strong elastic wool and with a well-developed body produce a more profitable breed and in shorter time than those delicate animals, with very thin and soft wool, was fully proved.

* Ohio Agricultural Report, 1862.

When the Silesian wool-growers became acquainted with the Merinos of Saxony, they went there for rams and ewes possessing a different character from the Silesian; the wool was softer and the sheep of a more delicate form and less in size. Silesia had then two distinct breeds—those of the flocks furnished by the King of Prussia, with a strong elastic wool and large strong body, and the Saxon breed, of small size and with thin and soft wool. At that time the knowledge in wool was exceedingly limited. Very little attention was paid, also, to the form of the sheep; the only object was to obtain pure Spanish blood.

The progressive demand for Merino wool, and the success in breeding, induced all the estate holders to improve their native flocks. Saxony was the only country where Merinos could be got to supply the numerous applicants, and the flocks of the Elector and those of the private estates of Kliphausen and Rocheburg furnished most of the imported animals. Those who had less means bought rams of a cross-breed of native sheep and Merinos, and in a short time few of the original country sheep could be seen. The improvement was principally carried on with rams of mixed blood, and with a very limited knowledge in breeding.

Some wool-growers were misled in the beginning by the demand of the manufacturers for wool of different grades, which induced them to make changes in the direction of greater fineness. This gave the wool a tendency to felt and twist; fortunately it was only in a few flocks, and the fault was remedied by breeding anew from an original thorough-blood flock. By skillful treatment, and gradually, the taste of the manufacturers was gratified and their demand answered by the production of a wool of a quality suited to various new styles of woolen stuffs, which attracted buyers from all countries to supply their wants.

The high price of wool from 1815 to 1825 caused an extreme fineness of wool to be cultivated at the expense of other valuable qualities and the size and vigor of the animals. With the highest degree of fineness great softness had to be combined; the Saxon Electoral breed combined these qualities. Such sheep were employed in crossing; consequently the finest Silesian consisted of thin-fleeced, delicate animals, which, besides a deficiency of wool, were liable to many diseases. Between 1825 and 1830 wool sunk to an exceedingly low figure, and the Silesian growers began to diminish their flocks and change their whole system of farming. It brought about a crisis, and the attention now became particularly directed to an increase of wool in the fleece to compensate for the loss in the price. This crisis operated to the great benefit of the whole system of breeding the Merinos; the wool-growers aimed now at a greater quantity of wool instead of extreme fineness. This was the commencement of a system which reached a development that proved to be a great advantage.

The greatest development of the Silesian wool-growing system had for its object the production not only of the finest and softest wool, but

in great quantity; not overlooking nerve, whereby not only the value of wool, but the weight and volume also are enhanced. While the improvement of the sheep was so closely followed the improvements on the farms were not neglected; pastures were sown with grass and clover and large quantities of fodder were housed for the winter, which amply supplied the flocks with food. Through a proper culture of pasture land they were able not only to furnish a more abundant food, but a more healthy one. Another advantage gained by this system of improving the pasture land was that the wool developed itself more perfectly, according to the established fact that the better and more regularly sheep are fed and taken care of the more uniform and healthy the wool becomes, and its superior qualities remain without deterioration.

In 1811 Ferdinand Fischer, of Wirchenblatt, Silesia, visited Spain and purchased 100 ewes, the best he could find of the Infantado flocks, and 4 rams from the Negretti flock, and took them to Silesia, and up to 1851, when the first American importation was made, bred them pure without crossing with any other flocks or blood; but they were crossed within the two families. The mode pursued was to number every sheep and give the same number to all her increase. An exact record was kept in books, and thus the owner was enabled to give the pedigree of every sheep owned by him, running back to 1811, which was positive proof of their entire purity of blood. The sheep of this flock were, perhaps, not as large as they would have been had a little of other blood been infused, but it was claimed that entire purity of blood was indispensably necessary to insure uniformity of improvement when crossed on ordinary wool growers' flocks, and such was the general opinion of wool-growers in Germany, Poland, and Russia, which enabled Mr. Fischer to sell at high prices as many rams and ewes as he could spare.

In 1851 George Campbell, of Vermont, was traveling in France and Germany looking for a fine-wooled sheep adapted to American husbandry. In Silesia he saw the flock of Mr. Fischer, and was attracted to it. The sheep composing it possessed great sameness and uniformity of appearance, denoting purity of blood. They retained a remarkable degree of evenness of staple over the entire body, and were finer and more compact, especially on the belly, than any other sheep of that time. The staple was not quite so long as in some other flocks. The surface presented a dark appearance, and on opening disclosed a beautifully white oily wool. The oil was sufficient to give the sheep a desirable dark surface, but, unlike some of the Spanish, was wholly removed by washing in cold water. The ewes were nearly faultless in shape; the rams were less perfect in this respect previous to maturity. They were of medium size, the ewes weighing at maturity 80 to 100 pounds, and the rams from 100 to 150. The weight of fleece was about the same as the best Spanish flocks, 19 ewes from this flock producing 145 $\frac{7}{16}$ pounds of unwashed wool of ten months' growth, which would

HAINES, DEL.

SILESIAN MERINO EWE.

FROM "CULTIVATOR," 1851.

equal 175 pounds for twelve months, and would make the yearly average a fraction over 9 pounds. The average live weight of these ewes was 71 pounds each, but when fully grown would have been 80 to 90 pounds. The product of wool to live weight was 1 to 7 1/8.

Believing that a selection from this flock would supply an existing want and prove acceptable to a large class of wool-growers in the country, Mr. Campbell made a purchase, and in May, 1851, 15 rams and 40 ewes from the Fischer flock arrived at New York for William Chamberlain, Red Hook, Dutchess County, who was a partner with Mr. Campbell in the transaction. Other importations were made in 1853, 1854, and 1856, to the total of 34 rams and 212 ewes.

The Silesians did not attract the attention vouchsafed the Saxon in former days, and more latterly, though not to great degree, the French Merino. So many experiments with imported sheep had resulted in disastrous failure that farmers were wary and avoided them.

In 1862 Mr. Chamberlain stated that his medium-aged ewes sheared from 8 to 11 pounds; rams, from 12 to 16 pounds. The wool on his sheep (8 months' growth) was 1½ to 2 inches long. Their external color was dark. The wool had oil, but no gum whatever, the sheep having been bred so as to make them entirely free from gum. The oil was white and free.

Five ewes weighed 115, 140, 130, 115, and 127 pounds, and three grown rams 145, 158, and 155 pounds; a yearling ram weighed 130 pounds. The ewes were from 24 to 28 inches high; fore leg, 11 to 12 inches; rams, 27 to 28 inches high; fore leg, 12 to 13½ inches. The Silesians were hardy, much more so than a small mutton flock subjected to the same treatment, and they were first-rate breeders and nurses. They had not deteriorated, but the wool was fine without any reduction in the weight of fleece. Take the average of the flock and the ewes would weigh 110 to 115 pounds. In a few years the American-Silesian had slightly increased in size. The shearing of a New York flock in 1856 shows the following weight of carcass and fleece:

	Carcass after shearing.	Fleece.
	Pounds.	*Lbs. oz.*
Ram	110	13 4
Breeding ewe	74	8 12
Do	62	9 2
Do	75	9 6
Do	66	8 9
Yearling ewe	57	8 7
Do	73	8 7
Do	67	8 5

The Silesian more nearly resembled the Spanish Merino than did the French and Saxon, which were bred away from the characteristics of the parent race. It was a high-bred Spanish sheep, with a fleece supe-

rior in quality to that of any Merino imported into the country, except the Saxony. Mr. Randall sums up his opinion of this sheep in 1862:

> Wherever it is more profitable to grow really fine wool this variety ought to stand unrivaled; and I can not entertain a doubt that there will always be sufficient demand in the United States for such wool to make large flocks of these Silesian sheep profitable. If our broadcloth manufactures should revive, as it is to be hoped they will, it will add immensely to the call for this class of wool. Where it is desirable to make crosses between Merinos and coarse breeds, or to add to the fineness and evenness of coarse families of Merinos, these sheep would seem well fitted to the object.

But the demand for Silesian wool was not felt, and the broadcloth manufacture did not revive, consequently the Silesian sheep had no encouragement, and with the French and Saxony Merinos were almost universally condemned by 1865. As to their value as crosses an experiment was made, but not in the direction indicated by Mr. Randall. Mr. James Geddes preserved a fine flock of Silesians, and in 1869, when everything was running to coarse-wool production, he selected 100 choice Silesian ewes, with the view, on account of the unremunerative price of wool, of combining with it the production of mutton. Two Cotswold rams were purchased to put with them. The resultant 80 to 90 lambs from these ewes were very fine, and partook strongly of the characteristics of the Cotswold. An average yearling of the cross weighed 80 pounds, and his fleece weighed 7¾ pounds. Several fleeces of the ewes weighed 9 pounds each, and one only fell as low as 5 pounds.

Writing in 1870, William Chamberlain said that he had during the preceding fifteen years imported 500 Silesian sheep of the first quality, and had them ever since, and they continued to do well; full as well as any breed of sheep of which he had any knowledge. The wool did not deteriorate. His flock averaged fully 8 pounds unwashed wool. It was sold to a Connecticut manufacturer, who made doeskins which compared favorably with the best German doeskin. The cross of the Saxon and Silesian had resulted very satisfactorily.

At the death of Mr. Chamberlain the German shepherd, Carl Heyne, who had cared for and handled the flock with great ability, selected a choice lot and more than sustained their former reputation in hardiness and excellence of fleece. After the death of Mr. Heyne the flock became the property of C. D. Kenyon, of White Creek, Washington County, N. Y. The fleeces averaged one-third less than those of the American Merinos, but excelled in fineness and sold for 5 cents more per pound. The wool was formerly in demand for soft felt hats. It is very soft and not quite so fine as the Saxony. The sheep are somewhat larger than the Saxony, which they resemble in form. They shear a heavier fleece than the Saxony. At the New Orleans Fair in 1885 they took the premiums for fine-wool sheep. The descendants of the Chamberlain flock are still bred by the Kenyon Brothers and seem to be well adapted to their surroundings.

The war of the rebellion gave a great impetus to the sheep husbandry of New York, as shown by the increase of flocks in 1862–'63, and the importation of Merino rams from Vermont. There was a sharp revival of fine-wool growing and an emulation not only in the State but throughout the entire country in raising heavy fleeces and announcing the weights in the newspapers and agricultural publications of the day. These weights show the great improvement made, and, though in some cases probably excessive and lacking in uniformity of the standard, deserve permanent record.

In 1861 Dr. Ira Spencer, of De Ruyter, sheared an Atwood Merino flock of 40 ewes 3 years old and upwards, 10 yearling and 2 grown rams, and 8 wethers. The average weight of the whole fleeces, washed on the back, was a trifle over 7 pounds. As this small flock may be accepted as a typical New York Atwood Merino flock of that date, some particulars are given.

Sex.	Live weight.	Height.	Weight of fleece.
	Lbs.	*Inches.*	*Lbs.*
Ram	132	29	19½
Ewe	91	23	7
Do	87	23½	6½
Do	107	24½	8
Do	89	24	7
Do	98	24½	7

The ram's fleece was of eleven months' growth and unwashed. The sheep ran for nearly three weeks between washing and shearing. Their winter feed was hay, and each received daily half a pint of provender, made up of three parts by measure of oats and one part of oil-meal. The ram received more.

In the same year George Geddes, president of the New York State Agricultural Society, procured from Sweet Brothers, of Onondaga County, a statement showing the proportion of wool to meat in sheep of different ages, sexes, and sizes. The flock of the Sweet Brothers consisted of 180, of several grades, one-half to three-fourths Spanish Merino, and a portion of the largest one-fourth French Merino; the base of the flock, but a few years previous, was Saxony. The sheep were sheared June 26 and 27, 1861, and every sheep and fleece was weighed and recorded on the spot. They were sheared promiscuously and classified both by age and weight. The heaviest sheep weighed 133 pounds, the lightest 43. The heaviest fleece weighed 9½ pounds, the lightest 3¼ pounds.

Classified by age, except those 4 years old, which are subdivided by sex. The 4-year old ewes all had lambs, and 35 reared them.

No. in class.	Sexes. Ewes.	Wethers.	Rams.	Gross weight.	Weight of carcass.	Weight of wool.	Average weight of carcass.	Average weight of fleece.	Pounds of carcass to one of wool.	Per cent of wool to gross weight.	Age.
				Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*			*Years.*
22	19	11	2	2,160.25	1,901	189.25	62.21	5.28	11.11	7.83	1
30	15	15	1	2,508.37	2,347	161.37	78.23	5.27	13.98	6.43	2
51	9	42	....	5,013.25	4,700	313.25	92.15	6.14	14.10	6.24	3
26	....	25	1	2,921.13	2,736	185.13	105.11	7.12	14.76	6.33	4
41	41	....	....	3,736.00	3,557	181.00	86.75	4.41	19.65	4.84	4
180	84	92	4	16,241.00	15,231	1,010.00	85.17	5.38	15.17	6.18	1 to 4

Classified by weight in divisions of 10 pounds each.

No. in class.	Weight of division from—	Sex. Ewes.	Wethers.	Rams.	Gross weight.	Weight of carcass.	Weight of wool.	Average weight of carcass.	Average weight of fleece.	Pounds of carcass to one of wool.	Per cent of wool to gross weight.
					Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*		
5	43 to 51	5	....	....	256	234	22	46.80	4.40	10.63	8.59
14	50 to 61	10	4	....	871	803	68	57.35	4.85	11.80	7.80
20	60 to 71	14	6	....	1,427	1,320	107	66.00	5.35	12.33	7.49
34	70 to 81	21	12	1	2,742	2,567	175	75.50	5.14	14.66	6.38
39	80 to 91	19	20	....	3,566	3,355	211	86.00	5.41	15.87	5.90
34	90 to 101	11	22	1	3,453	3,252	201	95.64	5.91	15.42	5.82
18	100 to 111	4	13	1	2,016	1,905	111	105.83	6.16	17.16	5.50
11	110 to 121	....	10	1	1,353	1,273	80	115.72	7.27	15.91	5.89
5	129 to 134	....	5	....	657	622	35	124.40	7.00	17.76	5.32
180	43 to 134	84	92	4	16,241	15,231	1,010	85.17	5.38	15.17	6.18

These figures may be taken as a fair showing of the average wool-growing flocks of New York in 1861. From several shearings in Cayuga County, the same year, of ordinary Spanish Merino flocks there was an average yield per head of 5½ pounds of washed wool, and in Ontario County an average yield of $5\frac{5}{16}$ pounds, figures approximating very closely to those above given.

On June 1, 1864, at the Ontario County sheep-shearing 13 rams and 6 ram lambs were shorn. The average weight of the old rams was 112 pounds each, the average weight of the fleeces $19\frac{3}{16}$ pounds, an average yield of fleece of 17 per cent to the weight of carcass. The 6 ram lambs weighed in the aggregate 532½ pounds—the heaviest 108 and the lightest 69½ pounds. Their fleeces aggregated $95\frac{5}{16}$ pounds—the heaviest $16\frac{13}{16}$ pounds, the lightest $15\frac{5}{16}$ pounds. The sheep were unwashed, and most of them had been housed and carefully shielded from the weather.

At a public gathering in Cayuga County June 8, 1864, there were shorn rams and ewes; the heaviest ram's fleece was $23\frac{5}{16}$ pounds, and the heaviest ewe's fleece $10\frac{5}{16}$ pounds, both fleeces unwashed.

The manner of shearing the sheep, the various methods of washing, the different ages of the fleeces, and other elements of uncertainty, and

particularly the increasing amount of yolk in the wool suggested a more correct standard of measurement, such a standard as would determine the absolute weight of a fleece when thoroughly cleaned as wool is cleansed by the manufacturers. To this end D. D. T. Moore, of the Rural New Yorker, offered a premium of $50 "for the fleece of one year's growth or thereabouts, which, on being cleaned, shall be found to give the greatest weight of wool, in proportion to its time of growth and to the live weight of the animal." There were fifteen entries, one of which was a Cotswold ewe. The shearing and scouring took place at Canandaigua May 11, 1865, and the result was thus tabulated in order of merit:

No.	Sex.	Condition.	Age in years and days.	Weight of animals.	Weight of fleece shorn.	Weight of scoured wool.	Per cent of fleece to live weight.	Per cent of scoured wool to live weight.
				Pounds.	*Pounds.*	*Pounds.*		
1	Ewe	Fair	*2	49.00	9.85	4.75	20.0	9.6
2	do	Fair	†365	53.00	11.21	4.50	21.1	8.4
3	do	Good	†408	47.00	8.97	4.43	19.0	9.4
4	do	Good	*2	63.50	14.43	5.12	22.7	8.0
5	Ram	Good	*1	50.00	11.31	3.97	22.3	7.6
6	Ewe	Thin	†331	33.00	7.03	2.28	21.3	6.9
7	Ram	Thin	*2	61.00	10.81	4.47	17.0	7.3
8	Cotswold ewe	Good	†381	99.50	8.90	7.31	8.0	7.0
9	Ewe	Good	†289	55.50	9.15	3.59	16.0	6.2
10	do	Fair	†420	68.50	12.42	4.81	18.0	7.0
11	Ram	Good	*2	77.50	15.72	6.25	20.0	8.0
12	Ewe	Fair	*2	54.50	10.25	3.33	18.0	6.1
13	do	Fair	*2	78.50	17.50	5.31	22.2	6.0
14	Ram	Good	*4	95.00	20.00	6.56	21.0	6.9
15	do	Good	†381	106.50	18.00	5.13	16.0	4.7

No.	Sex.	Per cent of scoured wool to fleece.	Per cent of shrinkage.	Age of fleece in days.	Quantity of product each day.	Quantity by 1 pound of animal each day.	Quantity of wool produced.‡	Quantity by each animal in one year.
					Pound.	*Pound.*	*Pound.*	*Pounds.*
1	Ewe	48.0	52.0	367	.01294	.000264	.09496	4.72
2	do	40.1	59.9	358	.01264	.000238	.08567	4.60
3	do	49.3	50.7	408	.01865	.000230	.08365	3.94
4	do	35.4	64.6	373	.01372	.000216	.07884	5.00
5	Ram	35.4	64.6	366	.01084	.000214	.07811	3.94
6	Ewe	32.3	67.6	331	.00688	.000208	.07592	2.50
7	Ram	42.3	58.7	366	.01214	.000190	.07293	4.43
8	Cotswold ewe	82.0	18.0	385	.01908	.000189	.07098	7.06
9	Ewe	39.2	60.8	356	.01898	.000192	.07000	3.88
10	do	36.1	61.9	389	.01068	.000190	.06935	4.75
11	Ram	39.4	60.6	425	.01303	.000188	.06862	5.31
12	Ewe	32.4	67.6	341	.01470	.000179	.06533	3.56
13	do	30.3	69.7	376	.00976	.000179	.06533	5.13
14	Ram	32.6	67.4	385	.01703	.000170	.06533	6.20
15	do	28.6	71.4	380	.01362	.000125	.04562	4.94

* Years. † Days. ‡ By 1 pound of animal in a year.

It will be observed that the small sheep had greatly the advantage in the contest, not that the very smallest sheep proved the winner, but the rule in the main was proven true that small sheep, having more surface in proportion to their weight, give more wool per pound of body; from which the judges who made the award drew the conclusion that for the mere purpose of wool-growing very large sheep were not desirable.

On May 9, 10, and 11, 1865, a State sheep fair was held at Canandaigua, at which many sheep were sheared. The heaviest ram fleece was 29 pounds 2 ounces, from an animal weighing 121 pounds; the heaviest ewe fleece was 18 pounds 9 ounces, from an 8-year-old animal weighing 95 pounds. In this same year the New York State Sheep Breeders' Association offered prizes for the heaviest scoured ram's and ewe's fleeces in proportion to their time of growth and weight of carcass. The results, excluding the ram fleeces below 5½ and the ewe fleeces below 4½ pounds, were:

Sex.	Age.	Carcass.	Fleece.	Scoured.	Growth.
	Yrs. D.	*Pounds.*	*Pounds.*	*Pounds.*	*Days.*
Ram	1 60	77.50	15.72	6.25	425
Do	4 0	95.00	20.00	6.56	395
Do	1 14	108.50	18.00	5.18	380
Ewe	2 0	49.00	9.85	4.75	367
Do	365	53.00	11.21	4.50	358
Do	2 0	63.50	14.43	5.12	373
Do	3 0	73.50	17.50	5.31	376

Some fleeces scoured by private parties showed heavier than any here given, one owned by Josiah Taft scouring 8 pounds from a fleece of 30 pounds. This was from the stock ram Osceola, the first New York ram that sheared 30 pounds, or a scourd fleece of 8 pounds.

In 1866 the Pottle and Cossitt prizes of the New York State Sheep Breeders' and Wool Growers' Association were offered for scoured fleeces of greatest weight and value in proportion to time of growth, without regard to weight of carcass. The fleeces were scoured by an officer of the Syracuse Woolen Manufactory Company. Ram fleeces under 5 pounds and ewe fleeces under 4½, after scouring, are omitted in this list.

Sex.	Carcass.	Fleece.	Scoured.	Growth.
	Pounds.	*Pounds.*	*Pounds.*	*Days.*
Ram	134.75	18.34	5.12	338
Do	123.50	17.90	5.25	385
Do	152.00	22.57	6.03	394
Do	110.00	16.09	5.21	344
Do	116.25	12.87	5.03	345
Do	92.00	13.78	5.03	405
Do	127.00	19.71	5.26	380
Do	115.00	15.37	5.10	394
Do	105.75	17.21	5.03	407
Ewe	77.00	14.06	5.29	364
Do	65.75	17.43	5.08	402
Do	103.50	14.03	4.09	375

In 1867 the Pottle and Cossitt prizes were again offered, and but one sheep competed; that one a ewe, whose weight of carcass was not given. She sheared a fleece of one year's growth weighing 16 pounds 3 ounces, which, when scoured, gave 6 pounds 4½ ounces. The Moore and Wilcox prizes were offered for the heaviest ram's and ewe's fleeces, in propor-

MERINO RAM "OSCEOLA," No. 55.
BRED BY L. W. SPALDING.
FROM "REGISTER OF THE N. Y. STATE AMERICAN MERINO SHEEP BREEDERS' ASSOCIATION."

HAINES, DEL.

Sackett & Wilhelms Litho Co New York

tion to time of growth and weight of carcass, and the competition was as follows:

Sex.	Weight of carcass.	Weight of fleece.	Scoured.	Growth.
	Pounds.	*Pounds.*	*Pounds.*	*Days.*
Ram	75.00	18.84	7.84	368
Do	84.50	15.62	6.56	355
Do	68.50	13.37	5.15	390
Ewe	35.50	8.75	4.03	373
Do	50.00	10.00	5.37	365

These weights show that from 1865 to 1867 the sheep of western New York sheared double the weight in cleansed wool that they did in 1830. The improvement in that direction continued.

At a sheep-shearing in Ontario County, June, 1868, 11 ewes one year old, whose aggregate weight was 568 pounds, sheared 130½ pounds of wool, an average per head of 11$\frac{9}{11}$ pounds. Seven ewes, two years old and over, whose aggregate weight was 450½ pounds, sheared 84 pounds, an average per head of 12 pounds; the greatest was 13 pounds 11½ ounces. Two yearling rams whose weights were 101½ and 97½ pounds gave, respectively, 16 pounds 9 ounces and 18 pounds 3 ounces of wool. Eleven rams two years old and over, whose aggregate weight was 1,314½ pounds, sheared 217 pounds 10 ounces, or an average of 19 pounds 12½ ounces per head. The heaviest fleece was 25 pounds, and two others weighed 24½ and 23½ pounds. All the fleeces were unwashed.

The shearings of 1869 showed some remarkable results. That of the Ontario and Livingston County Wool-Growers' Association was recorded with considerable minuteness. Five sheep were shorn:

Sex.	Age.	Age of fleece.	Weight of carcass.	Weight.	
				Fleece.	Scoured wool.
	Yr. Mo. Dys.	*Yr. Mo. Dys.*	*Pounds.*	*Lbs. Oz.*	*Lbs. Oz.*
Ewe	1 1 21	1 1 21	51	13 2	4 13½
Do	1 1 3	1 1 3	51	10 2½	4 11½
Do	1 2 3	1 2 3	75	16 13	5 8½
Do	3	11 20	87	16 15	6 9
Ram	3	11 21	108	24 3	9 3

The three-year old ram shearing 9 pounds 3 ounces of scoured wool was the property of Levi Noble, and the first Merino sheep on record as yielding 9 pounds of scoured wool. The wool was well scoured by manufacturers who used wool for heavy cassimeres, fine cloth, flannels, and stocking yarns, mostly for customers.

At a sheep-shearing at Alexander, Genesee County, June, 1869, 8 sheep were shorn:

Sex and age.	Weight of carcass.	Weight of fleece.	Age of fleece.
	Pounds.	*Lbs. oz.*	*Y. d.*
Three-year-old ewe	61	14 8	1
Three-year-old ram	100	10 7½	1 5
Three-year-old ewe	76	11 13½	1 4
Four-year-old ram	155	23	1
Two year-old ram	159½	34 ½	.....
One-year-old ram	65	15 5½	.....
Two-year-old ram	126½	35 2	1 4
Six-year-old ewe	107	17 12	.....

When it was announced that C. Crossman's "Dixie" had produced a fleece of 35 pounds 2 ounces there was some incredulity, but the correctness of the weight was so well established that it was accepted. Henry S. Randall called for a scouring test, which was given, the result showing 9 pounds 1½ ounces of scoured wool, making the second sheep that had reached or exceeded 9 pounds. Dixie was of Vermont stock, and had Humphreys, Jarvis, Cock, Crowningshield, and Cutting blood. He was born March 25, 1867, and on May 4, 1868, sheared 28½ pounds. In 1870 he weighed 131 pounds and sheared 34 pounds 14 ounces of good wool. In 1871 he sheared 33 pounds. He never equaled his second fleece.

Still another 35-pound fleece was reached in 1869. The record of the Ontario and Livingston shearing gives five fleeces as exceeding 20 pounds; the highest of these was S. D. Short's two-year old ram, whose weight of carcass was 145 pounds. The fleece was of one year's growth and weighed just 35 pounds; his fleece of the previous year weighed 27 pounds 8 ounces. The fleece was about the usual fineness of wool considered by the breeders as desirable for heavy-fleeced American Merino sheep. The staple ranged in length from about 1⅝ to 1⅞ inches, mostly of the latter length. The hardened external yolk or gum was not unusual in amount. Within, the wool was filled to excess and stuck together with yellowish, semi-hardened yolk. The ram was housed from nearly all storms during the year, was wintered on hay and swill from the kitchen, composed of sour milk, apple and potato peelings, and dishwater, of which he was fond. He had some grain, say a pint of oats per day, and the same quantity of bran. But this fleece did not stand the scouring test. When subjected to the same process that the Noble and Crossman fleeces had gone through it yielded but 6 pounds 15 ounces scoured wool, which amount was exceeded by two fleeces shorn at the same time, weighing before scouring 21 pounds 11 ounces and 24 pounds 8 ounces, scouring, respectively, 8 pounds 5 ounces and 7 pounds 2 ounces. The record of 7 sheep is here given.

Sex.	Weight of carcass.	Weight of fleece.	Weight of scoured fleece.
	Pounds.	*Lbs. oz.*	*Lbs. oz.*
Ewe	84	10 20	4 15
Ram	117	21 11	8 5
Ram	130	24 8	7 2
Ram	118	23 4	6 13
Ram	113	18 15	6 8
Ewe	89	14 8	5 12
Ewe	86	13 5	5 6

Mr. P. Martin, of Rushville, had some fleeces scoured, and preserved the record:

A ram fleece weighing 19½ pounds scoured 7 pounds 4 ounces.
A ewe fleece weighing 19½ pounds scoured 7 pounds 1 ounce.
A ewe fleece weighing 16½ pounds scoured 5 pounds 4 ounces.
A ewe fleece weighing 13½ pounds scoured 4 pounds 15 ounces.
A ewe fleece weighing 13½ pounds scoured 4 pounds 12 ounces.
A ewe fleece weighing 15½ pounds scoured 5 pounds 6 ounces.

A Wyoming County flock of 83 Merinos sheared 890 pounds of unwashed wool. The 5 rams of the flock sheared 25 pounds 4 ounces, 21 pounds, 18 pounds 12 ounces, 22 pounds, and 27 pounds 4 ounces. From a Monroe County flock 3 rams sheared 20 pounds, 16 pounds, and 22 pounds 3 ounces, and 10 ewes averaged 12½ pounds each.

The decade from 1860 to 1870 witnessed a wonderful improvement in thoroughblood flocks, but a great decline in the number of fine-wooled sheep and a further substitution of the coarse-wooled mutton sheep throughout the State. The State census of 1855 showed a clip of 2,630,161 fleeces weighing 9,331,202 pounds, an average of 3.55 pounds per head. In 1864 the clip had advanced to 3,804,982 fleeces, weighing 15,801,864 pounds, or an average of 4.15 pounds per fleece. In 1865 the fleeces numbered 3,783,935, weighing 15,347,445, or an average of 4.06 pounds per fleece. There was a slight decline all around, a decline which was rapid to 1870, when the number of sheep was 2,181,578, yielding 10,599,225 pounds of wool, a loss in five years of 1,602,357 sheep and 4,748,220 pounds of wool. But the average amount of wool per head increased from 4.06 in 1865 to 4.86 pounds in 1870. In 1875 the number of sheep declined to 1,489,956, wool to 7,369,857 pounds; and the average per head of wool increased to 4.95 pounds.

Between 1824 and 1840 the Saxony Merino absorbed the Spanish Merino, and for the few years preceding 1840 the great wool-growing flocks of the State were mostly of Saxon blood, and when from 1840 to 1850 these began to be abandoned no other wool-growing sheep immediately took their places. The losses on the Spanish Merinos in 1815, and later on the Saxons, had not been forgotten, and many farmers turned their attention to dairying, which proved a steadily and highly remunerative department of husbandry. But gradually the Spanish Merino regained favor and grew in esteem. It returned to many farms from which it had been banished and supplanted newer and more ambi-

tious rivals. The ten years from 1850 to 1860 witnessed the almost complete extirpation of the Saxon Merino from the fine-wooled sheep husbandry of the State and the introduction of the French Merino. The ten years from 1860 to 1870 saw the disappearance of the French Merino.

Causes, too, now operated against the Spanish or American Merino and in favor of long and middle wooled sheep, in which there was a great increase. The great development of the worsted manufacture from 1862, the decline in the price of fine wool, the scarcity and comparatively high price of combing wools, combined with the greatly increased demand for mutton in large cities, rendered the long-wooled sheep more profitable, and induced many flock-owners to put their Merino ewes to long-wooled rams, preferably the Cotswolds, it being considered, in fact, folly to use any other. This caused the Cotswold to be largely introduced, and in nearly every county of the State this or other coarse-wooled breeds had almost supplanted the fine-wooled Merino by 1870. In this year A. C. Brundage crossed 120 Merino ewes with Cotswold rams very successfully. The average weight of his Merino ewes was 80 pounds; the weight of the Cotswold ram at two years was 200 pounds. Several of the lambs at six months old weighed over 90 pounds each, and the fleece shorn from them in the following season brought more in the market than Merino fleece.

Some notes in the progress of the coarse and middle wooled sheep can be given. In 1850 the Southdowns, in Ontario County, were found not only profitable for wool-raising but their superior mutton caused many of them to be raised for the Eastern markets. In 1853 John R. Chapman, Madison County, imported a fine lot of Lincolnshire sheep from the best English flocks. Their fleeces averaged over 11 pounds each. In 1854 Mr. Hallock, of Milton, imported, through Col. Ware, of Virginia, some Cotswold sheep from the best improved flocks. Two of the ewes had drawn first prizes at the Royal Agricultural show. These ewes were large, superbly formed, and averaged 10 pounds fine, soft wool. The rams weighed nearly 300 pounds. One of them at two years old sheared 18½ pounds; another 17½ pounds. They had fine heads and limbs, deep, full briskets, great breadth and length of body, and well taken up in the belly. At the sale of Col. Lewis J. Morris' Southdowns in July, 1856, the ewes averaged about $150 each, and an imported ram brought $400.

The Cheviot sheep, introduced into Delaware County in 1838 and again in 1842, were quite widely extended over the southern central counties, particularly in Otsego County, where fine breeding flocks still exist. These sheep were very hardy, bearing exposure to wet better than the long-wool breeds, on account of the closeness of the wool upon the back and the hardiness of their constitution. Their breeders claimed that they were quiet in disposition and easily fenced and controlled.

The rams sheared 8 to 12 pounds of wool and the ewes 4 to 8 pounds, well washed. The rams sold for $20 to $40 each.

Among the noted Southdown breeders of the State was Samuel Thorne, of Dutchess County. Mr. Thorne imported from the best English flocks, raised a breeding flock and crossed on Merino and common ewes, to produce early lambs for the New York market. His method was to purchase the ordinary Ohio Merinos, sometimes from the droves as they arrived and sometimes from the farmers who kept them over one season. He preferred the latter, the difference in price alone causing him to purchase the former. When selecting them the point of the greatest importance was to get good milkers, that governing the choice more than anything else, as the object was to get prime early lambs. When there was a chance to select ewes with a cross of either of the mutton breeds he always availed himself of it, though the difference in price between them and the ordinary ones was generally too great to make it as profitable. All things being equal, he preferred large sheep to small ones. Ewes with a strong tincture of Merino blood take the ram with more certainty early in the season than those deeply crossed with the mutton breeds, therefore the former were preferred. He turned his ewes with a Southdown ram the 1st of September, thus bringing the lambs the first part of February. They were made to grow and fatten as rapidly as possible, and were disposed of to the butchers when they reached 40 pounds in weight. They were thus all disposed of by the 1st of June, and the ewes had all the summer to fatten in. The sheep were bought usually a few weeks before the ram was to be turned in with them, and cost from $2.50 to $3 each. They were kept upon hay alone until just before the lambing time, when a daily feed of turnips was given. After the lambs came they were given also a feed of meal or bran slop. A place was partitioned off for the lambs, and they were regularly fed. The feed going directly to the lamb made growth of fat with more profit than when given through the mother's milk. The percentage of increase never averaged less than 100 per cent of sale sheep. The lambs went to market from two and a half to three months old, and when in fine condition averaged $5 per head, bringing more early in the season and less later. The ewes having only to provide for themselves during the summer were by fall in very good condition and required very little grain (which was first fed to them as soon as the frost injured the grass) to fit them for a good market. They averaged about $5 also. To this must be added the wool, which generally made a good return. It cost more and required more attention to fit lambs for the early market, but the extra price they commanded and the better chance which was given the ewes to fatten by getting off their lambs so soon much more than compensated.*

This system was followed by many farmers in eastern and southern New York, and called for Southdown rams, which commanded good prices.

* Statement of Samuel Thorne, 1862.

At a sale of Mr. Thorne's, September 2, 1863, of direct descendants of his many importations, 81 ewes sold, which yielded at their last shearing 419 pounds of clean wool, an average of 5 pounds 2¾ ounces per head. The rams gave from 8 to 12 pounds unwashed wool.

Twenty-one yearling ewes sold from $20 to $50 each; aggregate, $743; average of $35.39 each.

Nineteen two-year-old rams sold from $37 to $66 each; aggregate, $1,027; average of $54.05 each.

Thirteen three-year-old ewes sold from $25 to $95 each; aggregate, $559.50; average $43 each.

Nine four-year-old ewes sold from $31 to $51 each; aggregate, $351; average, $39 each.

Nineteen rams sold from $17 to $500 each; aggregate, $1,392; average, $73.26.

The highest price ($500) was paid for the imported prize ram Archbishop by G. H. Brown, of Dutchess County. He was bought of Jonas Webb in 1860 at a cost of $1,250. These sheep were all pedigreed and were sold to all parts of the United States.

In the same year (1863) P. Lorillard had a sale of Southdowns and Shropshire Downs. Ninety-three Southdown ewes averaged $22.07 each, and 33 rams averaged $18.44 each, one ram bred by J. C. Taylor, of New Jersey, selling for $160. The Shropshires did not sell so high. Seventy-four ewes and lambs averaged $11.50, and 36 rams $15.90 each.

From this time the Cotswold began to grow rapidly into favor. The Southdown did not have enough size for most breeders, and it did not furnish as much wool as the Cotswold. The introduction of new machinery and new fabrics, for want of cotton, enhanced the value of all combing wools in England and America, and placed their commercial value nearly if not quite equal to the ordinary fine wool, a fact that caused a tendency to increase the flocks of Cotswolds and other combing-wool sheep, especially where pastures were rich and the soils strong, population dense and the people fond of mutton. As the Cotswold yielded 8 to 10 pounds of wool where the Southdown yielded but 6 pounds, the former was preferred, and the demand for them was large. Importations were freely made and good prices realized.

Woolen factories increased their capacity and took on more operatives; the demand for coarse wool was great and the product of the mills doubled. This continued until the war closed, when the heavy importations from Great Britain and the immense body of army woolens thrown upon the market came near ruining our manufacturers and slaughtering all the sheep. The tariff of 1867, urged upon Congress by the wool-grower, saved the fine-wool industry from immediate and threatened destruction, and built up the coarse-wool and mutton interest. The supply of coarse combing wool was wholly inadequate to meet the demands of the manufacturer. On the other hand, the country was overstocked with woolens sufficient to keep down prices for two or three years. But the coarse wools increased beyond the fine wools and even obtained the ascendency in prices. Consequently a mania set

in for English sheep, and superficial observers thought that the Merino was to be wholly superseded by the mutton sheep throughout the whole country, and in New York such was measurably the case. Conservative writers called attention to the great need of more combing wool and better mutton, which could be obtained only by keeping the English long-wool sheep. High-priced land and high-priced labor demanded high farming, and high farming required high feeding; the latter profitable only with improved stock. These were the sheep of the grain-growing farmer, and adapted to the New York system of farming. Under the increasing demand and fashion for materials made of combing wool the English sheep received increased attention and were multiplied, and their fleeces were noted as were those of the Merino a few years previous. The Lincolnshire sheep, which were neglected years before, now found eager purchasers and commanded high prices. The fleeces of three are recorded in 1869:

One ram a year old gave a washed fleece of 20 pounds; extreme length, 17 inches.
One ram a year old gave a washed fleece of 18¼ pounds; extreme length, 16 inches.
One ewe one year old gave a washed fleece of 16½ pounds; extreme length, 15 inches.

Texel sheep were also introduced and the shearing of two ewes is recorded. One whose weight of carcass was 90 pounds gave 8 5/16 pounds of wool, and one whose weight was 154 pounds gave 9 5/16 pounds of wool.

The Cotswold continued to be the favorite coarse-wooled sheep, and many trials were made by crossing rams of that breed on Merino ewes to get a cross that would unite the flesh of the former with the wool of the latter. In 1871 the American Agriculturist reported 67 lambs from 60 Merino ewes and a pure-bred Cotswold ram. The lambs were healthy and hardy. But one was lost. One weighed when dropped 12½ pounds. At 9 weeks old 5 of these lambs weighed 50, 46½, 52½, 47½, and 46½ pounds, an average of 49 pounds each. A grade Cotswold-Merino ram lamb killed at 7 months old weighed before being killed 96 pounds.

Blood weighed 2½ pounds; offal weighed 21 pounds; pelt weighed 18 pounds; carcass weighed 54 pounds; waste weighed one-half pound.

Seventy-four such lambs were raised from 60 ewes, costing $2.50 each. They were well wooled from the nose to the toes.

In 1869 Joseph Harris, of Rochester, began an experiment with the Cotswold-Merino cross, which he conducted for many years with great care and system in selection and crossing, as also in feeding, to secure size of carcass and qualities of flesh and fleece. He succeeded in breeding a flock of great uniformity both as to mutton and wool. In 1887 he raised 168 lambs from 150 ewes, losing three only.

J. D. Wing had a flock of imported Cotswolds from which lambs at 10 weeks old weighed 48½, 50, 48½, 47½, 46½, and 48 pounds.

In 1874 his thoroughbred Cotswold ewe lambs 11½ months old weighed 128, 122, 125, 135, 129, 137, 125, 101, 104, 109, 125, and 101 pounds. The last had a fleece of fine lustrous wool, 12 to 14 inches long. His ram lambs at same age weighed 142, 145, 157, 179, and 187 pounds,

dressing 25 to 29 pounds per quarter. The best yearling ram weighed 253 pounds.

In 1875 Joseph Harris communicated to the American Agriculturist the results of an interesting experiment on feeding Cotswold sheep, showing the gain in one month. He weighed the sheep July 16 and again August 16. The figures are given as recorded:

Age.	Weight July 16.	Weight Aug. 16.	Gain in one month.	Variety.
Years.	*Pounds.*	*Pounds.*	*Pounds.*	
4	231	235	4	Cotswold ram.
2	246	265	19	Do.
2	259	262	3	Do.
2	236	249	13	Do.
2	224	229	5	Do.
1	168	173	5	Do.
1	187	202	15	Do.
1	187	198	11	Do.
1	158	165	7	Do.
1	202	218	16	Do.
1	169	181	12	Do.
1	183	200	17	Do.
1	171	174	3	Do.
1	144	146	2	Cotswold-Merino, first cross.
1	193	193	.....	Cotswold-Merino, second cross.
1	195	215	20	Do.

These 16 rams gained 156 pounds in one month, or 9¾ pounds each. The following are the weights of lambs, all Cotswolds:

Sex.	Born.	Weight July 16.	Weight Aug. 16.	Gain in one month.
		Pounds.	*Pounds.*	*Pounds.*
Ram	Feb. 27	92	105	13
Ewe	Feb. 27	84	91	7
Do	Mar. 1	72	87	15
Do	Mar. 2	80	89	9
Ram	Mar. 2	87	101	14
Do	Mar. 3	81	98	17
Do	Mar. 3	83	96	13
Do	Mar. 8	78	94	16
Ewe	Mar. 8	71	81	10
Do	Mar. 8	72	86	14
Ram	Mar. 13	107	123	16
Do	Mar. 14	89	104	15
Ewe	Mar. 14	81	95	14
Do	Mar. 19	92	109	17
Do	Mar. 19	85	88	3
Ram	Mar. 23	89	108	19
Do	Mar. 24	91	104	13
Do	April 5	77	86	9

The average weight of these 18 pure-bred Cotswold lambs on July 16 was 84 pounds, and on August 16 97¾ pounds, or an average gain of 13¾ pounds.

In 1876 A. J. Brown, Jeddo, N. Y., had a Cotswold ram weighing 309 pounds that sheared 17 pounds of wool, and A. E. Sweet, of the same place, had three yearling ewes whose weight of carcass and fleece were:

Carcass.	Fleece.
Pounds.	*Pounds.*
148	16½
141	16
134	14

At this time the Cotswold was the most popular and most widely extended English breed of sheep in New York and in the Union. The pure-bred genuine Leicester of twenty years past were not to be had. The so-called Leicesters of 1876 were nearly as large as the Cotswolds and in no respect superior. A few were imported but were not appreciated. They were too small and delicate to suit the popular taste, though they made excellent crosses with the Merino. The Southdown, though acknowledged as the best mutton sheep of the English breeds, was also too small. The Lincolnshire had been tried and discarded as unfitted to the climate and method of our agriculture. There was now a demand for a different type of sheep, a popular need for a sheep which would produce a large carcass of mutton along with a fleece of wool which would command as high a price per pound as any of the pure breeds. The Southdown, the Cotswold, the Leicester were less profitable sheep for the farmer than the Oxfordshire, the Hampshire, and the Shropshire, which had been introduced to some extent. But the trouble was that all the English sheep deteriorated and the farmer could not keep a pure-bred flock up to the standard. A sheep was wanted larger than the Southdown, but of equal quality for mutton, and with a heavier fleece and a fine one. Such a sheep, it was thought, could be raised from the material at hand, the best foundation for which could be found in the grades of English Downs—the Southdowns, the Hampshire, and the Shropshire—short, with black or smutty faces and hardy constitutions, with medium wool packed close and impenetrable to rain or snow. It did not pay to import and keep pure breeds to produce mutton at 6 to 8 cents a pound. This business was carried on to some extent, whereby the ordinary flocks were crossed by imported English sheep, but what was wanted was something better even than English sheep, which it was necessary to keep up by constant importations; it was needed to establish an American breed or breeds of sheep, as we did the Merino, and to stop importing with a view to maintain the standard of the English breeds. Such was the plaint of the agricultural papers in 1875 and 1876, but no valuable practical results followed.

An effort in the direction of a new sheep may be noted. In 1868 William Crozier, of Beacon farm, near Northport, Long Island, produced a cross between an imported Southdown ewe and the Cotswold ram Kingston, imported that year. This ram was a choice animal and had been the winner of many prizes in England, Canada, and the United States. The ewe was also from selected and choice stock. The produce of this ram and ewe bred in-and-in, the result being a sheep of good constitution, with a heavy fleece of combing wool, much superior in quality to, and of equal weight with, that of the pure Cotswold, and much closer and denser upon the sheep's back, while the carcass of mutton was as good as and one-half larger than that of the pure Southdown. This description and an engraving of the sheep appeared in the American

Agriculturist in 1875, at which time Mr. Crozier intended to breed two years longer until assured he had a standard breed.

That assurance never came to Mr. Crozier, and meanwhile English sheep continued to be imported, the Southdowns losing ground, the Shropshires holding their own and attracting much attention, but the Cotswold still the predominating sheep. These sheep were introduced into all parts of the State, some into the southern and eastern part by direct importations from England, others from Canada went into the northern and western counties and gradually displaced the Merinos. There were many crosses of these sheep on the Merino grades and on the common sheep of the country.

At the New York State fair, in 1877, there were exhibited sheep bred from common Merino ewes and a Cotswold ram. The wool of the first cross measured 5 inches in length, was as fine as Merino, and as easily combed as Cotswold. The wool of the second cross was as long as the pure Cotswold and as fine as Merino wool. The carcass made excellent mutton, and was nearly as heavy as pure Cotswold. A cross of the Cotswold with the Merino made the heaviest lambs, but a cross of the Southdown with the Merino made the best ones.

The increased interest taken in coarse-wooled sheep did not cause the utter neglect of the Merino, nor was fine wool-growing abandoned. The war of 1861–'65 did not at first cause a demand for fine wool, but the first year marked an increased interest in the Merino, which developed into a mild mania. High prices were paid for fine-wooled sheep of all kinds. Sales of Merino rams were made at $800, $1,000, and $2,500, and ewes and lambs in proportion. There was more practical sense in paying these prices for the hardy, well-constitutioned Merino of 1865 than was shown in the purchase of the delicate little Saxony sheep of 1825, whose exquisite fineness of wool had been produced at the expense of the constitution of the breed, and whose extension degraded the vigor of the old Spanish Merino flocks, reduced the weight of their fleeces, and discouraged the efforts of the farmer in improvement. In 1865 it was different. The Spanish Merino had been developed and improved until it had become of great excellence. There was a temporary depression in the fine-wool industry from 1865 to 1871, and fat cattle and dairying received more attention. But in 1871, when the tariff of 1867 began to show its effect, there was a demand for fine and other wools, which gave a new start to wool-growing, which was further assisted by the great decline in fat cattle and dairy products. Beef, pork, butter, and cheese had brought good prices when wool was quite low, but 1871 restored wool to favor as the others declined, and there was a prosperous era for the wool-growers extending over some years, though upon the whole the Merino flocks were constantly declining, and in 1874 Merino rams could be bought for $25 and a flock at an average of $10 per head.

Breeding flocks kept up the record of improvement. In 1870 Mr.

HAINES, DEL.

BEACON DOWN RAM.

FROM "AMERICAN AGRICULTURIST," 1878.

Munson, of Seneca County, sheared 53 Merinos, ewes, wethers, and a few rams, and the average was 12 pounds per head of unwashed wool, which sold at 25 cents per pound. The flock of P. & G. F. Martin, of Monroe County, sheared on an average 13 pounds 3 ounces, 57 sheep having yielded 753 pounds. Six ewes over 2 years old, whose average weight of carcass was 78½ pounds, gave an average fleece of 15 pounds 10½ ounces. A shearing at Skaneateles showed fleeces running from 16 to 24 pounds, and 10 ewes averaged 16¾ pounds. A ram fleece reached 32½ pounds from a carcass weighing 168 pounds. In 1871 the flock of P. & G. F. Martin (70 ewes and 15 rams) clipped 1,203 pounds of good-conditioned, unwashed wool, which sold for 30 cents. The ewes averaged 13½ and the rams 17 pounds. During the winter the ewes were fed clover hay without grain until lambing time, April 1, when they were fed grain and roots in addition to hay, and this feed was continued until turned to grass. The rams and lambs had oats and wheat bran in moderate quantity, with hay during winter. This flock was started in 1866 by the purchase of 10 ewes from the flock of William Rogers, of Mendon, and increased by additions from Vermont flocks, but always in the Atwood blood or line until, in 1872, it numbered 214 head—130 ewes, 14 rams, and 70 lambs. The average weight of the fleeces for the years 1870, 1871, and 1872 of ewes 2 years old and upward was 13½ pounds, of yearling ewes 11¾ pounds. Torrent was the stock ram of the flock. He was bred by F. H. Dean, Cornwall, Vt., got by Little Wrinkley, bred by Edwin Hammond. His first fleece was 16 pounds; second, 24½; third, 29¾; fourth, 28½; and fifth, 29 pounds. He is thus described in the New York Register:

> Was purchased of his breeder, when 2 years of age, by Peter and George F. Martin, Rush, N. Y., and stood at the head of their respective flocks down to the time of his death, in 1875. He was also quite extensively used by neighboring breeders, and was the sire of quite a number of famous prize-winning rams. He weighed, in full fleece, 180 pounds, was decidedly masculine in general appearance, and a showy, attractive, smoothly-turned ram. He had a very heavy neck, that was well let down, and was enormously folded at tail, across the hips and thighs, and carried a heavy, deep flank, which reached well forward. His side folds were heavy, hung low on the carcass, extending well under and across the belly, and was proportionately folded at point of shoulder. He was in carcass what would be termed a deep sheep, and yet had good breadth of back, loin, hip, and shoulder. His breastbone was broad, strong, and extended well forward. His fleece was dense, medium quality, tolerably well crimped, and heavily charged with a buff oil, which was well distributed through the fleece. He was fairly covered on the head and legs, and, while his fleece was thick and blocky on the belly, he was a little too open at flank and armpit. His blood is an important factor in many of the flocks of western New York and Michigan, and he will always take rank among the best rams of his day. Weight of fleece, 29½ pounds; length of staple, 2 inches; length of fiber, 3 inches.

S. B. Lusk, of Batavia, Genesee County, had a flock founded in 1866 from which he sheared in 1871 from 98 sheep (78 ewes and 20 rams), 1,280 pounds of merchantable wool, or an average of 13 pounds each on the entire flock. In 1874, at Skaneateles, he sheared from a flock of 26

an average of 14½ pounds each. The heaviest ram's fleece was 24½ pounds, the heaviest ewe's fleece 18 pounds. Mr. Lusk was subsequently part owner of the ram Addison, bred in Vermont, and he was used in his flock. This ram was of immense carcass and enormous proportions, weighing in full fleece a trifle over 200 pounds; was a straight-backed, level-topped sheep, broad in the shoulder, back, loin, and hips; round in the rib and quite deep in carcass. His head was shapely, well carried, and remarkably well covered; nose and face short and broad, well wrinkled, soft and velvety to the touch. His horns turned moderately broad on top and denoted that he possessed a wonderful constitution. He carried a very even fleece with good length of staple, was highly crimped, and for so long a fleece it was well set also. He was remarkably well wooled on the legs and fairly so on the underside. Oil slightly buff, abundant, and coated him well on the outside. He would be classed as a smooth-carcassed sheep, with good neck, tail, and flank. Weight of fleece, 29¾ pounds; length of staple, 3 inches; length of fiber, 4½ inches. He was esteemed a good sire, and left some heavy shearing stock, notably Hopeful and Genesee, whose fleeces were reported 37¾ and 37½ pounds, respectively. This last fleece won the highest honors at the Paris Exposition, a gold medal. Addison died at 13 years of age, the property of S. B. Lusk, of Batavia, N. Y., and A. D. Taylor, Romeo, Mich.*

In 1874 there was a State sheep show at Canandaigua. It had been nine years since the last one of the kind, and the improvement made in that time was remarkable, both in size of carcass and length and closeness of fleece. The increase of weight in the fleece was nearly all wool, as the fleeces were less greasy on the average than in 1865. The wool on the belly and legs had become as long and nearly as close and as well crimped as on the shoulders. Breeders had made decided advances in the direction of a larger bodied sheep, with fleece of greater weight and uniformity, the latter without any increase, or with actual decrease, in the greasy and gummy secretion which works out in the scouring. The flocks compared favorably in weight with the imported French Merinos of 1846 to 1850, which had been banished from the State, but which proved more successful in the Southwest and in California. At the same time these fleeces were heavier in pure wool, and the sheep were much more hardy. Another desirable change observed was that the sheep held their fleeces full and perfect to old age. The ram Addison, 8 years old, weighed 185 pounds, and was wooled to the hoof and to the tip of the ears. Torrent, jr., 7 years old, was wooled all over. He weighed on the scales 171 pounds and his fleece 26½ pounds. He was used on 200 ewes in the fall of 1873. Yet to appearance these rams were in their prime. Ten years before it would have been a difficult matter to find a ram of that age that had any wool below the

* Register of the New York State American Merino Sheep Breeders' Association, Vol. I.

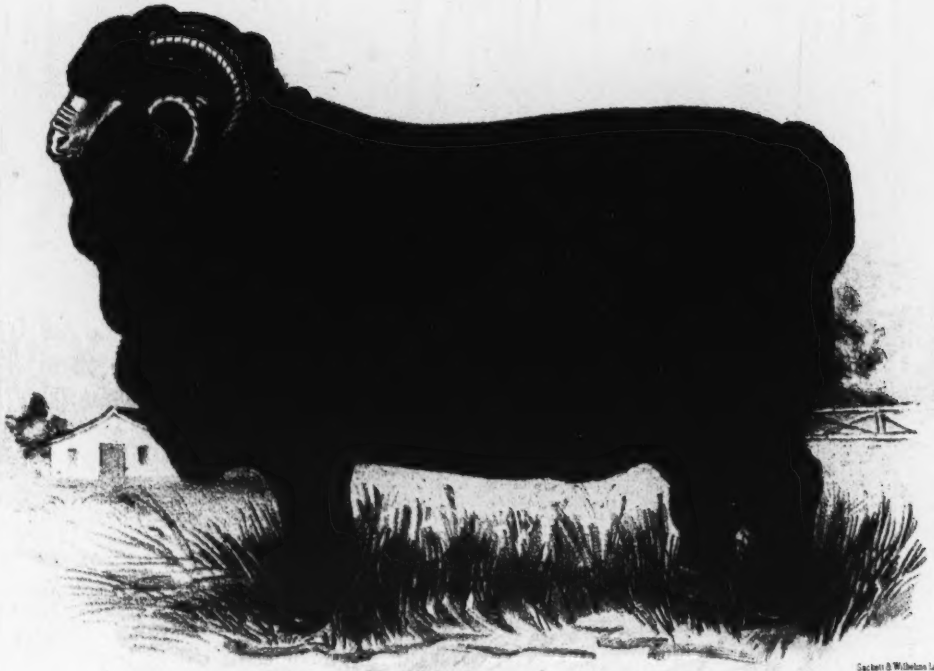
HAINES, DEL. MERINO RAM "ADDISON," No. 100.

FROM "REGISTER OF THE N. Y. STATE AMERICAN SHEEP BREEDERS' ASSOCIATION," VOL. I, 1888.

HAINES, DEL.

MERINO RAM "HOPEFUL," 201.

FROM "REGISTER OF THE N. Y. STATE AMERICAN MERINO SHEEP BREEDERS' ASSOCIATION."



Sackett & Wilhelms Litho Co New York

HAINES, DEL.

MERINO RAM "GENESEE," 172.

FROM "REGISTER OF THE N. Y. STATE AMERICAN SHEEP BREEDERS' ASSOCIATION," VOL. I, 1888.

knee, or more than a very little on the belly. The lowest yield of wool sheared at the show was 15 per cent of the whole weight.*

The shearing for 1874, as reported by the State Association, gives no fleece under 15 pounds. Nine are recorded, 5 rams and 4 ewes. The rams' fleeces were 31 pounds 8 ounces, 26 pounds 2 ounces, two at 25 pounds 8 ounces, and one at 22 pounds. Two ewes gave 18 pounds each, one 17, and one 15 pounds 8 ounces.

At the Rochester fair in 1875, A. C. Bennett received the first premium for a 4-year-old ram weighing 180½ pounds and giving a fleece of 29 pounds. The second best was P. R. Pitt's ram, weighing 148 pounds and yielding a fleece of 23 pounds 13 ounces. The best ewe was sheared by P. and G. F. Martin. She was 2 years old, weighed 108 pounds, and gave a fleece of 17 pounds 3 ounces. There was shown, but not entered for premium, a 10-year old ewe that gave 22½ pounds of wool, the growth of one year and five days.

The shearing record of 1878 shows 10 rams yielding from 16 pounds to 29 pounds 1 ounce, and 9 ewes from 17 pounds to 20 pounds 7½ ounces. The rams averaged 23 pounds 8½ ounces, the ewes 18 pounds 2 ounces. In 1879 4 rams are on record as weighing 156½, 146½, 156, and 176 pounds, and giving fleeces weighing, respectively, 27 pounds 1 ounce, 26 pounds 3 ounces, 27 pounds 8½ ounces, and 27 pounds 6½ ounces.

In 1879 the shearing of S. B. Lusk's Merino flock gave these results:

Sex.	Age.	Weight of carcass.	Weight of fleece.
	Years.	*Pounds.*	*Pounds.*
Ram (Hopewell)	5	171	33½
Do	2	149	29½
Do	1	115½	25½
Do	1	130½	23½
Do	1	115½	19½
Do	1	120½	18½
Do	4	138	28½
Ewe	5	107	18½
Do	2	106	24
Do	2	112	21
Do	2	102	19½
Do	2	111	19½
Do	2	114	19½
Do	2	111	18½
Do	2	97	18½
Do	2	107	18
Do	1	97	18½
Do	1	82	17½
Do	1	95	17

The breeding flocks showed a constant and well-sustained improvement, but the growing of fine wool steadily declined, and in 1880 New York could not be called a wool-growing State, that is, there were but few farmers who made the production of wool a specialty. And yet a large amount of wool was produced annually, for the keeping of small flocks was very general with all the farmers of the State. The 1,715,180 sheep kept in 1880 were almost entirely in small flocks, varying from 5

* Report on the Fair.

to 30. The lambs and fat sheep were disposed of to butchers in cities and towns. The conversion of Merino flocks to coarse-wools continued. In western New York, from 1875 to 1880, many of the best farmers crossed Cotswold rams on Merino ewes with great satisfaction. Some of them who made many crosses had flocks which for all practical purposes were nearly equal to pure-blood long wools. These results were secured by a careful selection of Cotswold rams of pure blood, and, where possible, none others were used. In nearly all the western counties there was an increased demand for mutton and more combing wool. The latter want was supplied by the rapid conversion of the Merino flocks, and the call for mutton was answered by the shipments from the far Western States. Not only had New York ceased to grow fine wool, but she had fallen behind in the production of her own mutton.

In 1870 the number of sheep, as returned by the United States census, was 2,181,578, yielding 10,599,225 pounds of wool; in 1880 the number returned was 1,715,180, yielding 8,827,195 pounds of wool. The decrease in ten years was 366,398 sheep and 1,772,030 pounds of wool. The average yield per head increased from 4.86 in 1870 and 4.95 in 1875 to 5.14 pounds in 1880.

At no other period previous to 1882 were the New York flocks of breeding Merinos so highly appreciated as at that date, nor was the prospective demand on them so promising; and the breeders assumed that no breed or family of domestic animals possessed such varied characteristics and met such a diversity of wants as their Merino sheep, varying greatly in size of carcass, form, and general contour, in fleece from short to long staple, with fiber varying from fine or broadcloth wools, medium quality, and long-stapled delaine wools, and coarser, stronger-fibered, shorter staple clothing wools, at the same time possessing another characteristic peculiarly their own, that of folds or wrinkles, which more than any other gives character and individuality to the animal. With such varied characteristics in the breed, and a demand for all its different grades of fleece, and a diversity of tastes among its breeders, it was not strange that it was difficult to find any two flocks similar in type and general characteristics, although nearly alike in blood or line of descent. The New York breeders, by common consent, group this family of sheep under the head of two distinct types, classified as American Merinos and Delaine American Merinos, each supplying a special want of our manufacturers in the product of wool, as well as meeting the fancy and taste of breeders. Those who have a fancy for the American Merino type generally have a common aim and object in breeding, and differ but very slightly in what constitutes their highest ideal or perfect sheep. Hence they endeavored, as a rule, to type-breed their flocks, and selected, as far as possible, the materials promising success in that direction, hoping by untiring effort to establish the type which would reproduce itself with almost unvarying certainty.

A perfect animal of this type must be symmetrical and finished in outline, and harmonious in all its parts. "Back straight, ribs well arched, shoulders deep, chest broad, breast-bone or brisket extending well in front, lung cavity well distended, hips long, straight, and broad; thighs heavily muscled and well let down; neck short and strong, without depression on top; head broad, with short face; nose broad and well wrinkled; legs medium length, straight, heavy-boned, and standing well apart at knee and hock." In point of fleece, there has scarcely been an effort to breed a fiber of sufficient fineness for broadcloth wools, or staple long enough to be classed as delaine wool. Yet great effort has been made to secure uniform length, density, and quality of fleece on every part of the carcass, especially on the belly, thigh, forearm, and between the neck folds, covering, as nearly as possible, the inside of the flanks, armpits, the legs all around to the hoofs, with cap extending well over the face, covering the point between the eyes and horns, well cheeked up from the face corner of eyes to mouth. But few persons would prefer a staple of more than 2½ inches for a ram, while many would be quite contented with a 2-inch staple of highly crimped wool, provided the maximum density of fleece had been reached. Comparative evenness of fleece, with little gare as possible, is an important point reached by modern breeders, and is an improvement in the right direction. Experience has demonstrated that great weight of fleece of high medium quality can be combined with the highest physical development and constitutional vigor and other points of perfection. As to point of yolk or oil, the greatest amount that can be secreted without impairing the vitality of the animal is admissible in a ram. Most breeders prefer a color bordering on a buff, while a thin, sticky oil of a greenish cast is highly objectionable. As to folds or wrinkles, which are a distinctive feature of the American Merino type, there might be some diversity of opinion as to size, location, and number; still, it would be difficult to find a ram with such heavy, pendulous neck, tail, and flank as to disqualify him as a stock animal in any flock, while many would much prefer that with the above he should have a large fold extending across the point of the shoulder, a considerable number on the sides extending in massive proportions well under and nearly across the belly, yet diminishing well in size, and lost to view in full fleece before reaching the back, with numerous large folds lengthwise across the hips and stifles. Those who fancy the delaine type aim in the main to secure the same points of carcass and wooliness as the breeders of other American Merinos, while at the same time securing a long staple of high quality of wool. As to folds or wrinkles, a good neck, tail, and flank is about all that is desirable, with little or none on the body.*

* Register of the New York Sheep Breeders' Association.

An idea of the general character of the animals raised in the standard flocks from 1880 to 1890 can be obtained by the portraits given of them and the shearings as given in the Register of the New York Association.

The shearing record of 1880 showed 2 rams shearing 30 pounds 4 ounces and 30 pounds 2 ounces, and 12 shearing between 20 and 30 pounds. Four ewes sheared over 20 pounds each. J. W. Hardy's ram Matchless, 2 years old, gave 28 pounds 5 ounces, which when scoured yielded 9 pounds. The shearing record of 1881 is interesting and valuable, as it gives, in addition to weight of carcass and wool, the weight of some scoured fleeces and length of staple and fiber.

Shearing record of 1881 of the New York State Sheep Breeders' Association.

Owner's name.	Name of ram.	Age.	Age of fleece.	Length of staple.	Length of fiber.	Weight of carcass.	Weight of fleece.		Scoured wool.	
		Yrs.	*Days.*	*Inches.*	*Inches.*	*Pounds.*	*Lbs.*	*oz.*	*Lbs.*	*oz.*
E. S. Parmele	Young Captain	3	360	2½	3	134	25	3½		
Sherman & Martin	Reliable	2	367	1½	2½	99	18	14½		
L. Sherwood		4	382	2	2½	152	25	8		
Taft, Sherwood & Worthington.		2	382	2½	2½	122	25	15	7	1½
S. Hillman	Sam Arnold, jr.	3	351	2½	2½	100	22	7	6	5
D. Bennett		1		2½	2½	98	17	1		
Do		1	348	2½	3	82	19	2		
J. S. Beecher	Turk	2	363	2	2½	133	22	10½		
P. Martin	Martin	3	365	2	2½	118	24	11½		
W. J. Tyler	Gov. Sprague	2	364	3	3½	146	32	12		
H. Sherman		1	363			106½	19	6		
F. B. Pierson	Charles Spencer	5	368	3	3½	133	24	8	7	1½
Pierce & Fellows	Longfellow	2	364	3	3½	132	29	1	7	2
S. R. Lusk	Moneymaker	4	364	2½	3½	143	29	4½		
Beecher & Short	Banker, jr	2	358	2½	3½	120	23		6	4½
M. L. Taft	Sherwood	1	353	2½	2½	93	20	13½		
George Martin		1	343	2	2½	106	17	14		
D. Bennett	Livonia	3	363	2½	3	126	25	5	6	1
J. W. Cole	Geo. Martin	2	357	2½	3	105	21		6	14½
Ray Bros	Towanda	2	357	2½	3	106	27	10½	6	6½
H. Sherman		1	373	2½	3	109	16	14	5	7½
George F. Martin	H. F. Dean	1	380			98	17	7		
Bennett & Lyon	Jim Blaine	2	356	1½	2	152	25	9		
M. L. Taft		1	385			117	17	11		
D. Cosaitt		1	365	2½	2½	73	17	1½		
Do	Onondaga	1	365	2½	2½	83	20	9½		
A. C. Bennett		7	354	2	3	82	17	11		
Do		7	354	2	2½	101	16	8		
J. Pierce		2	363	3	4½	78	19	1	6	5½
M. L. Taft		2	357	2½	3	108	16	12		
E. S. Parmele		1	402			72	16	4		
A. C. Bennett		5	354	2½	3	82	18	1		
Do		4	354	2½	3	81	18	8		
J. Pierce		2	363	3	3½	83	19	9½		
Ray Bros		2	358	2½	3	77	14	9		
Do		2	358	2½	2½	82	15	11		
F. B. Pierson		1	365	2½	3	75	16	10½		
E. S. Parmele		1	394	2½	3	88	18	2		
M. L. Taft		1	366	2	2½	74	15	8		
E. S. Parmele		1	370	1½	3½	61	19	7		

There was but little change in the shearings for 1882, save that 7 rams gave fleeces exceeding 30 pounds, Ruby's Boy, bred by John S. Beecher, heading the list at 35 pounds 6½ ounces. Onondaga, that sheared 20 pounds 9½ ounces when a yearling in 1881, had at this time 30 pounds 2½ ounces. This noted ram weighed in full fleece 135 pounds, and was a low, deep, square, and well-formed sheep of very fine quali-

HAINES, DEL.

MERINO RAM RUBY'S BOY, 483.

FROM "REGISTER OF THE N. Y. STATE AMERICAN MERINO SHEEP BREEDERS' ASSOCIATION," VOL. I, 1868.

Haines, Del.

MERINO RAM "ONONDAGA," 473.

FROM "REGISTER OF THE N. Y. STATE AMERICAN MERINO SHEEP BREEDERS' ASSOCIATION," VOL. I, 1888.

ties. His head and nose were finely molded, legs short and heavy boned. He had a heavy, deep neck, and was well folded at point of shoulder, hip, tail, and flank; also had a considerable number of side folds which extended well on the under side. He was well covered on head and under side, and remarkably well on the legs, especially the forelegs. His fleece was one of his strong points of excellence. It was thick, even, of high style and quality, and opened in flakes free, without cross fibers, and was of uniform length and density throughout. He had a very heavy straw-colored oil, which circulated freely and coated him extremely well. He was considered as an extra sire, especially of ewes.

The shearing for 1883 is remarkable for the fact that a 3-year-old ram sheared 40 pounds of wool, and 6 others exceeded 30 pounds each; and of 18 ewes shorn 7 gave fleeces exceeding 20 pounds, one rising to 23 pounds 13 ounces. The scouring record shows that a ram owned by M. R. Bailey, four years old, age of fleece three hundred and eighty-one days, gave 27 pounds 13 ounces, which, when cleansed, gave 9 pounds 7⅜ ounces of scoured wool. The length of staple was 3⅛ inches; length of fiber, 3¾ inches, and weight of carcass, 131 pounds.

The shearing record for 1884 gives 11 rams as yielding over 30 pounds of wool each, the highest being J. S. Beecher's Jumbo with 37 pounds 1½ ounces. In 1885, out of 22 shorn, 8 exceeded 30 pounds, the highest being F. D. Barton's Black Jacket at 40 pounds 10 ounces. In 1886 2 rams were shorn of fleeces exceeding 30 pounds, Cortez giving at two years of age, from a carcass weighing 97 pounds, 38 pounds 3½ ounces of wool, or 39⅜ per cent of wool to weight of carcass. Another ram gave 32 pounds 14 ounces. Two ewes gave respectively 20 pounds 2¾ ounces, and 20 pounds 1 ounce, and a number exceeded 18 pounds. The New York Register gives 3 rams as exceeding 30 pounds of wool in 1887, and the Vermont Register adds 6 to the number:

Name of ram.	Age.	Weight of carcass.	Weight of fleece.		Length of staple.	Length of fiber.
	Years.	*Pounds.*	*Lbs.*	*oz.*	*Inches.*	*Inches.*
Julius	3	139½	36	4½	2½	3
Capt. Blaine	4	140	39	7½	1½	2½
Clipper	2	142½	31	8½	2½	3
Hocsac	3	100	32	....	.....	.....
D. W. Percy	5	127	35	6	.....	.....
Ray Bros.' 167	4	150	35	9	.....	.....
Ray Bros.' 177	3	133	31	15	.....	.....
General Jr	5	137	30	8	.....	.....
John B. Hayes	6	.....	31	....	.....	.....

The number of ewes exceeding 18 pounds was 19, one reaching 21¼ pounds, others 21 1/16, 20 14/16, 20 1/16, 20 14/16, 20 2/16, and 5 exceeding 19 pounds.

The scouring record for this year is here given:

Rams' scouring record, 1887.

Owner.	Name.	Age.	Weight in oil.	Weight of scoured wool.	Sire.
		Years.	*Lbs. oz.*	*Lbs. oz.*	
Ray Bros., Wynn & Riley.	Draco Prince	3	25 9½	7 3	Prince Bismarck.
M. F. Gibbs	Thickwool	2	21 7½	7 10	Don Bonarges.
A. C. Bennett	No. 110	2	13 11½	5 0	El Dorado.
J. S. Beecher & Son	No. 230	2	26 1	6 11½	R. J. Jones (196), 955.
Partridge & Dennison	Black Jack, jr	2	20 14½	5 9	Black Jack.
Do	Geo. F	2	21 8½	6 4½	Standard, 2d.
Lusk & Lewis	Royal	2	24	6 5½	R. J. Jones (196), 955.
S. S. Lusk	Julius	3	26 4½	7 2½	W. B. Porter.
Do	Almeron	3	29 6½	7 6½	R. J. Jones.
H. Sherman & Son	No. 852	1	14 9½	5 4½	Cossitt's Ram.
Do	No. 701	2	21 8½	6 7½	Judge.
		Ewes.			
P. & G. F. Martin	No. 719	3	15 9½	5 2½	Vici.
Do	No. 685	3	18 2½	5 5	Vici.
R. M. Lee	No. 38	2	20 14½	7 ½	Capt. Blaine.
J. P. Ray	No. 45	3	13 6½	6 8	Prince Bismarck.
D. Cossitt	No. 659	3	15 11	5 6½	Dude.
P. S. Thornton	No. 760	2	12 10	5 9	Judge.

The shearing and scouring record for 1889 is here given:

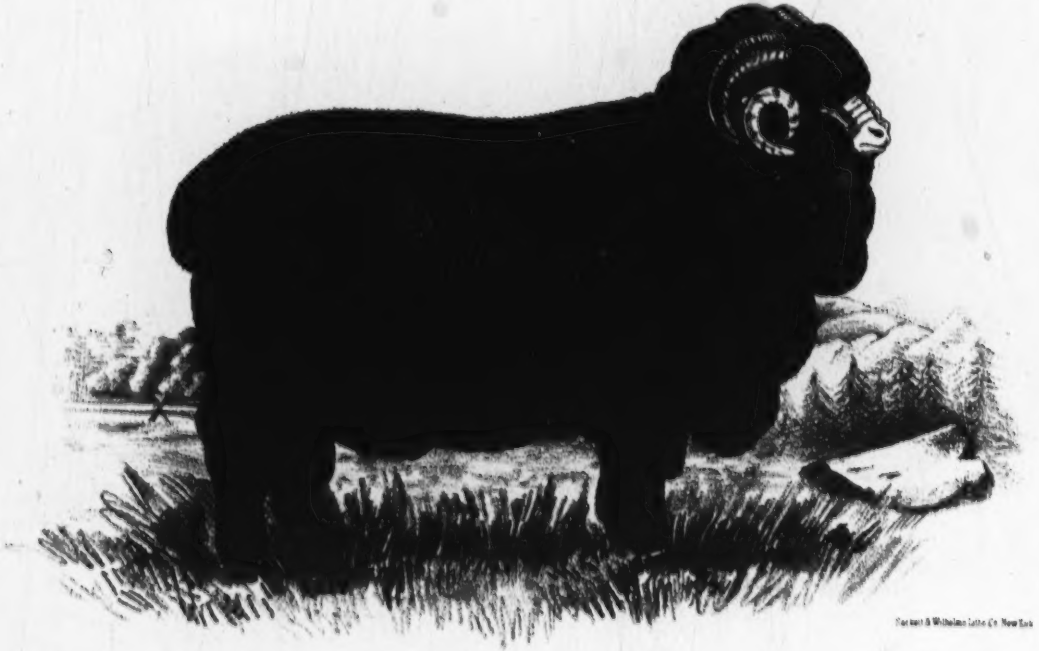
Ewes.

Owner and breeder.	Age of sheep.	Age of fleece.	Length of staple.	Length of fiber.	Weight of carcass.	Weight of fleece.
	Years.	*Days.*	*Inches.*	*Inches.*	*Pounds.*	*Lbs. Oz.*
R. M. Lee	1	382	2½	3½	72	15 13½
Do	2	349	2½	4	111	19 9
Do	4	382	3	4	106	17 2½
Do	3	382	2½	3½	97	20 12
Do	3	382	2½	3½	102	19 12
Davis Cossitt	2	367	2½	3½	70	18 4
Do	2	367	2½	3½	78	15 12
Do	2	367	2½	3	69	18 15
Do	2	367	2½	3½	75	18 0
G. S. Hickox	2	349	2	3½	88	15 12
Do	2	349	2	3	87	14 9
Do	2	349	2	3	71	16 15½
Do	2	349	2½	3½	100	16 5½
G. S. Preston	2	345	2½	3½	80	16 15
Do	1	355	2½	3	68	16 6
Do	2	345	2½	3½	65	17 8½
R. S. Parmele	2	345	2½	3½	79	23 7
Do	2	354	2½	3½	74	21 15
Do	2	354	2½	3½	83	26 8
M. Mariner	4	360	3½	4½	97	17 11
P. Martin	1	380	2½	3½	53	15 14½
Do	1	380	2½	3½	64	15 0
Do	3	372	2½	4	75	18 14½
Do	3	372	3	4½	68	17 9½
Do	3	372	2½	3½	74	19 0
Do	3	372	2½	3½	82	20 14½
J. H. Earll	1	425	2½	3½	67	16 0
Do	1	422	2½	3½	80	14 8
Do	1	395	2½	3½	60	12 12

HAINES, DEL.

MERINO RAM "RANZIN," 464.

FROM "REGISTER OF THE N. Y. STATE AMERICAN SHEEP BREEDERS' ASSOCIATION."



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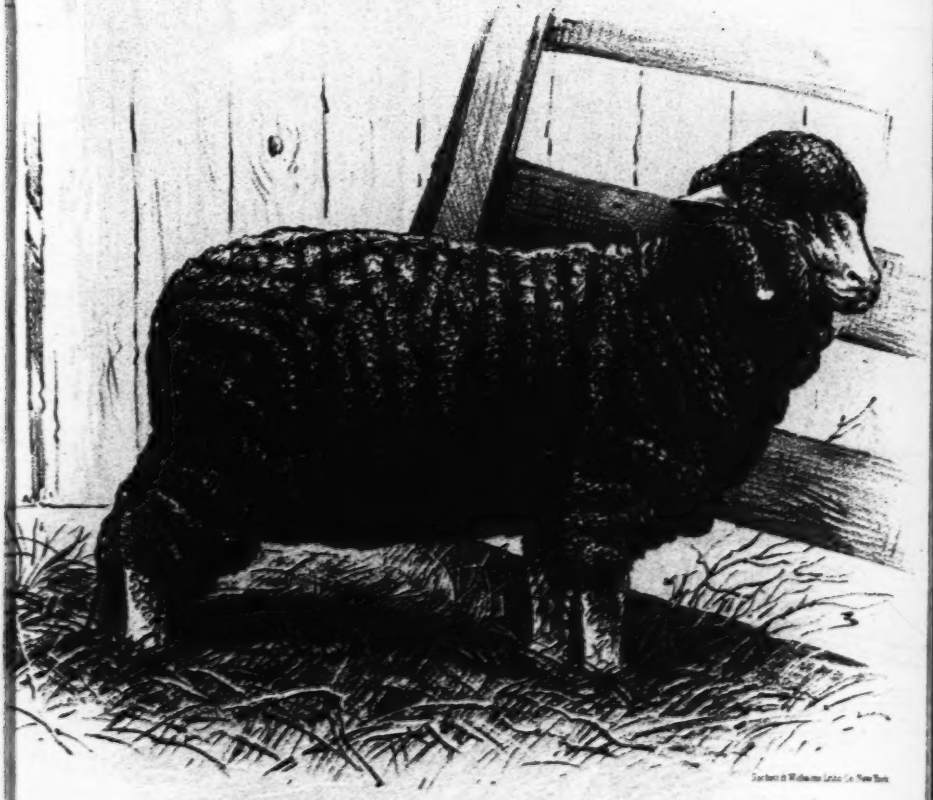
Hamm, Del.

MERINO RAM "LONGFELLOW," 480.

FROM "REGISTER OF THE N. Y. STATE AMERICAN SHEEP BREEDERS' ASSOCIATION," VOL. I, 1885.

MERINO EWE, No. 141.

FROM "REGISTER OF THE N. Y. STATE AMERICAN SHEEP BREEDERS' ASSOCIATION."



YEARLING MERINO EWE.

FROM PHOTOGRAPH OF GROUP OF PRIZE SHEEP AT N. Y. STATE FAIR, 1890.

YEARLING MERINO EWE.

FROM PHOTOGRAPH OF GROUP OF PRIZE SHEEP AT N. Y. STATE FAIR, 1880.

Rams.

Owner and breeder.	Name of sheep.	Age of sheep.	Days' growth.	Length of staple.	Length of fibers.	Weight of carcass.	Weight of fleece.
		Years.		*Inches.*	*Inches.*	*Pounds.*	*Lbs.* *Oz.*
P. Martin	Standard Jr	4	343	2⅞	3½	129	32 11
Do	Brick	2	343	2½	3	128	28 15
Do		3	343	2½	3⅜	108	29 7½
Do	Voucher	3	337	2½	3⅜	125	32 3½
Do	Idaho	3	371	2	3	116	28 8
G. F. Martin*	Copperbottom	3	337	2⅜	3½	125	28 4½
Do		2	370	2	3	88	23 2½
P. Martin		1	373	2⅜	3⅜	88	19 5
Croft & Burnett		2	346	2½	3½	132	32 10
J. Wilson	Middlesex	4	349	2½	3½	129	28 12
Do		1	329	2½	3½	132	24 3
C. W. Lewis†	Reserve	2	349	2½	3	108	21 0
M. Mariner		2	360	2½	3	107	24 9
Mariner & Lee‡	Harmony	7	368	2½	3	136	25 11½
E. C. Harris	Chimes	2	339	2⅜	3½	118	31 5

* P. Martin, breeder. † D. Cosslit, breeder. ‡ E. Townsend, breeder.

Report cleansed fleeces.

	Lbs.	*Oz*
P. Martin's ram, "Standard Jr.," gross weight	32	11
Clean wool—First quality, 6 pounds; second quality, 1 pound 4 ounces; third quality, 1 pound 1 ounce; total	8	5
E. C. Harris' ram, "Chimes," gross weight	31	5
Clean wool—First quality, 5 pounds 5 ounces; second quality, 1 pound 5½ ounces; third quality, 13 ounces; total	7	7½
Croft & Bennett's ram, 137, gross weight	32	10
Clean wool—First quality, 4 pounds 10½ ounces; second quality, 1 pound 1 ounce; third quality, 10½ ounces; total	6	6
R. M. Lee's ewe, 38, gross weight	17	2½
Clean wool—First quality, 5 pounds; third quality, 10 ounces; total	5	10

The record for 1890 is remarkable in the fact that one breeder presented 7 rams whose united fleeces weighed 251 pounds and ½ ounce, an average of 35 pounds 13½ ounces each. The heaviest of the seven fleeces was 38½ pounds and the lightest was 34 1/16 pounds. The heaviest fleece shorn at this time was 41 pounds 6⅜ ounces from a 3-year-old ram, Chimes, the property of E. C. Harris. The details of this shearing are presented in the following table:

Table showing record of the New York State Breeders' Association for 1890.

[All fleeces are on the basis of 365 days' growth.]

RAMS.

Owner and breeder.	Name of sheep.	Name of sire.	Age.	Length of staple.	Length of fiber.	Weight of carcass.	Weight of fleece.
			Years.	*Inches.*	*Inches.*	*Pounds.*	*Lbs.* *Oz.*
P. Martin	Brick	Vici	3	2	3	134	36 10½
Do	Rough	do	3	2½	3½	107	34 5½
Do	Block	do	3	2½	3	103	36 12
Do	Voucher	do	4	2½	3½	130	35 3
Do	Chub	Standard Bearer	4	2½	3½	112	35 9½
Do	No. 438	Standard Junior	2	2⅜	3½	107	34 5
Do	Ben	Copperbottom	3	2½	3⅜	118	38 9
E. C. Harris	Chimes	Vici	3	2½	3½	132	41 6⅜
G. S. Preston	Clipper	Envoy	5	2	3	147	39 11½
Davis Cossitt	D. C. 894	D. Cossitt 711	3	2½	3½	110	27 0
Lusk & Hickox*	Reform	Almoren	3	2⅜	3½	.....	25 1⅜
J. H. Karll	Star Gazer	Adirondack 2d	1	2½	2½	68	13 11
R. M. Lee	R. M. L. 66	Harmony	1	2½	3½	.....	14 1
H. C. Smith†	Uncle Sam	Paddy	1	2½	3½	97	19 2½

* S. S. Lusk, breeder. † L. P. Clark, breeder.

Table showing record of the New York State Breeders' Association for 1890—Continued.

EWES.

Owner and breeder.	Name of sheep.	Name of sire.	Age.	Length of staple.	Length of fiber.	Weight of carcass.	Weight of fleece.	
			Years.	*Inches.*	*Inches.*	*Pounds.*	*Lbs.*	*Oz.*
R. M. Lee		Capt. Blaine	4	3¾	3¾	92	22	0
Do		do	5	2¾	3¼	104	19	8
Do		do	4	2	3¼	96	21	2
H. C. Smith		Adirondack	2	2¼	3¼	69	13	2¼
Do*		Paddy	1	3	3¼	72	12	1
Do		Grand View	1	3	3¼	67	15	11
J. H. Earll		Adirondack 2d	1	2¼	3¼	61	12	12
G. S. Hickox		Prince Crimps	3	2	3		19	7¼
D. Cossitt		Leon	2	2¾	3¼	75	20	12
Do		Real Estate	1			50	15	9

* L. P. Clark, breeder.

It is freely acknowledged by the New York breeders that in their efforts to secure the largest fleeces many of them have paid too little attention to character and quality, and that the annual shearings show that sheep in many flocks have been well nigh fleeced to death.

From 1883 to the present time there has been an increasing interest in breeding a mutton Merino, and while it is not expected that such a sheep can supplant the Hampshire and Shropshire, it is expected that with the elimination of the ruffles and oil of the Merino, a tolerable mutton sheep would result. But the American people will not accept and use a tolerable or an inferior meat if a superior article can be obtained, and their demand for the juicy Down mutton stimulates the cultivation of the Southdown, the Hampshire, and the Shropshire, and discourages the efforts of those who would convert the Merino into a mutton sheep. The Merino, since 1883, has not held its own in New York. Large flocks have been reduced, and some have been sold and disappeared. There has been a decline in the number of the fine-wool sheep, and also in the coarse-wooled. This decline reached its lowest point in 1886, when mutton was a drug in the city markets and wool had touched bottom prices. But the temporary rise of wool in the spring of 1887 and a better demand for mutton came just in time to save thousands of sheep from slaughter, and held out an inducement to many farmers to start small flocks to supply markets with mutton and early lambs. Merino flocks gave way to mutton ones, and regular Atwood Merinos were sold in lots at $5 per head, and their places on the farm taken by sheep purchased in the West and fed through the winter for mutton. Thousands of such sheep are yearly brought into the central and western counties of the State. Formerly none but mature wethers were selected for this purpose, but the number of yearlings and lambs demanded for this industry is increasing. The revival of the sheep husbandry of New York continues, and is likely to continue as long as the appreciation of mutton as an article of food grows upon the people.

The Department of Agriculture estimates the number of sheep in New York January 1, 1890, at 1,548,426. From other sources the estimate is made that over half of these are of English blood and that less than half are descendants of the common sheep and Merinos and their grades. There are very few sections of the State where the former presence of the Merino does not show itself, but at present it is waning. While the improved English breeds produce the best mutton, the Merinos do not produce the worst, and the day may not be far distant when the prejudice against it may be removed. Certain it is, we must look to this sheep alone for improvement in our fleeces, nor can it be possible that it will ever be discarded entirely, for where large flocks are kept either for their meat or fleece they rest upon a Merino foundation.

But to be a mutton sheep the Spanish Merino must be bred away from a thick, heavy fleece to a full, rounded, and broader carcass, with a more open fleece and one of less weight; and some see in the French Merino a means to that end. When these sheep were originally introduced into New York wool was the only object looked to in the raising of sheep, and as they were inferior in that respect to the Spanish Merino they were driven to the wall before they had a fair trial in any other direction. An importation of these sheep by William G. Markham gives chance for a fair test and revives interest in them. In 1886 Mr. Markham secured a few of these sheep, bred from German flocks tracing to the Rambouillet fold near Paris. He predicts that should they prove hardy they will take the place of the Down breeds for crossing with a view to mutton because of the great value of their wool. At the New York State fair of 1890 some of the descendants of these sheep were shown by Mr. John P. Ray, who also had a few ewes sired by one of these French Merino rams out of Spanish Merino ewes. They were shown in the mutton Merino class and had fine but short wool. They were larger than the Spanish Merino of any family, had shorter wool and filled the mutton idea of a Merino, having a more inviting look than the wrinkly Merino.

Many prominent wool-growers, however, do not hesitate to say that the day for wool-growing at a profit in New York has passed, and that meat must be the foundation on which the sheep industry of the State must henceforth stand. There are those who go further and say that had mutton breeds been substituted for Merinos fifty years ago our people would ere this have been educated to the consumption of many times more mutton than they now demand, and we would have a grade of mutton that Great Britain would take at remunerative prices.

In the eastern part of the State of New York sheep husbandry ceased to exist when Merinos were abandoned, because they were unprofitable, and it is now reviving with the introduction of the improved mutton breeds. The industry is steadily growing. Our large cities demand lambs which develop rapidly and lay on flesh quickly,

and which give good carcasses at from 8 to 12 weeks of age. The rearing and feeding of such is a very profitable business.

The Cheviots introduced into New York in 1838 and maintained in great purity are now attracting some attention, not only in the State but beyond it. Many small flocks have lately been formed, and breeders believing in them who think "they are here to stay" have organized the Cheviot Sheep-Breeders' Association and adopted the following:

Scale of points.

BLOOD.—Pure bred from one or more importations from Scotland	10
CONSTITUTION AND QUALITY.—Indicated by the form of body; deep and large in breast, and through the heart; back wide and straight, and well covered with lean meat; wide and full in the thigh; deep in flank; skin soft and pink in color; prominent eyes, healthful countenance	25
SIZE.—In fair condition, when fully matured, rams should weigh not less than 175 pounds, ewes 135 pounds (when bred in America. Imported stock, rams 125 to 150 pounds, ewes 100 to 125 pounds)	10
GENERAL APPEARANCE.—Good carriage; head well up; elastic movement; showing symmetery of form and uniformity of character throughout	10
BODY.—Well proportioned; small bone; great scale and length; well finished hind quarters; thick back and loins; standing with legs well placed outside; breast wide and prominent in front; tail wide and well covered with wool.	10
HEAD.—Long and broad, and wide between the eyes; ears of medium length and erect; face white, but small black spots on head and ears not objectionable; straight or Roman nose; end of nose dark (but never smut nose on top with black or brown); no tuft of wool on head	10
NECK.—Medium in length; thick, and well placed on the shoulders	5
LEGS AND FEET.—Short legs, well set apart; color white; no wool on legs; fore legs round, hind legs flat and straight; hoofs black and well shaped	5
COVERING.—Body and belly well covered with fleece of medium length and good quality	10
QUALITY OF WOOL.—Medium; such as is known in market as half combing wool	5
Total	100

The Cheviot is a mountain sheep, extremely hardy, of quiet habits, and producing a wool always in demand. In the mountain parts of the State they are found to stand cold weather remarkably well, and it is believed that they would form a valuable addition to the live stock interests of the mountain regions of the Alleghanies and in Idaho, Montana, and Wyoming.

The rams at 3 years old weigh about 245 pounds, and yield 8 pounds of wool, though cases are on record where they have run from 250 to 275 pounds and gave fleeces from 9 to 14 pounds. The ewes weigh about 175 pounds and give 6 to 8 pound fleeces.

A sheep that has some hold on popular favor and many enthusiastic admirers, is the Hampshire Down. These sheep are bred in England on the chalk formations of Berkshire, Hants, Wilts, and Dorset, and occasionally are found in Sussex and Surrey. Youatt says the black-

faced sheep of Hampshire are a cross between the old black-faced Berkshire and the pure Southdown. A celebrated English breeder of 1858 stated that they were closely descended from an original hardy race peculiar to Hampshire. Their strength of constitution and size have been retained, and are characteristic of the animal. Prof. John Wilson, in 1855, said that the breed appeared to be the result of a cross between the pure Southdown and the old horned sheep of Hampshire and Wiltshire, by which the hard working though fine quality of the former was combined with the superior size and constitution of the latter. The breed was commenced early in the present century, and by a system of judicious crossing possesses the leading characteristics of the two parent breeds. E. P. Squarey, most excellent authority, asserts that the breed undoubtedly dates its origin from the crossing of the Old Wiltshire horned sheep and the Old Berkshire Nott with the Southdowns, which were introduced into Wiltshire and Hampshire early in the present century. The Old Wiltshire has already been noted (p. 45). The Old Berkshire was found at an early day in the center of Berkshire, where they fed on a light, sandy, and barren soil. Most of them were horned, some were polled. They had generally black faces, Roman noses, black or mottled legs, and long tails; some few, however, had white or mottled faces. They were strong, active, and tall, and folded well, and when fattened grew to an enormous size, but it generally took a long time to fatten them. These sheep were next in weight to the old Leicester breeds, but higher than them on the legs. The wool, although somewhat coarse, ranked among the short varieties. The first cross of this breed was with the Wiltshires, and was not altogether satisfactory; then the Southdowns gradually spread in the district and effected a complete revolution in the character of the sheep, and with few exceptions the Berkshires are now either pure Southdowns or very deeply crossed by them.*

For a long time after the displacement of the Wiltshires and Berkshires, the charming character and high quality of the Southdowns which superseded them satisfied the most advanced of the farmers of Berks, Dorset, Wilts, and Hants, and only when they came to realize how much they had lost in the size, early maturity, and hardiness of the Old Wiltshire type, as represented in the Old Wiltshire itself and the Berkshire, did they bethink them of going back to those animals for additional substance and development to the Southdowns. Then they began a system of crossing with Hampshire rams with varying degrees of success, depending simply on the instinctive capacity of the farmer to properly select the animals for this purpose. Whilst one aimed at the production of a large-framed long-wool producing, hardy animal, another devoted his attention to the maintenance of the high quality and beauty of the Southdown, with earlier maturity and

*The Sheep of Great Britain. In report of Bureau of Animal Industry, 1889-'90.

greater size. The consequence was that from about 1815 to 1835 the Hampshire Downs of the north of Hants and the south of Wilts were totally dissimilar in character. It was evident that the leading ram breeders of each district had aimed at and secured a different type. The North and East Hampshire sheep were large, muscular, early maturing animals, growing a fair quality of wool of moderate fineness; the head large and well set on, of dark brown color verging toward black, covered with coarsish hair, with Roman nose; the neck with greatly developed muscles; the ears thick, of the same color as the face, and an occasional tendency to recur to the original type by producing "snig horns;" the legs with large bones, and in the most strongly marked type the wool growing below the hocks and knees. An occasional white spot was exhibited on the face, ears, or legs, but the efforts of the ram breeders were uniformly directed to avoid this, and to procure perfect uniformity of color. On the other hand the Wiltshire breeders had adopted a more largely framed and probably less handsome animal than their Hampshire brethren. They were less careful as to the uniformity of color, and an ewe with speckled face or ears was not dismissed from their flocks, provided she had size and other good qualities.*

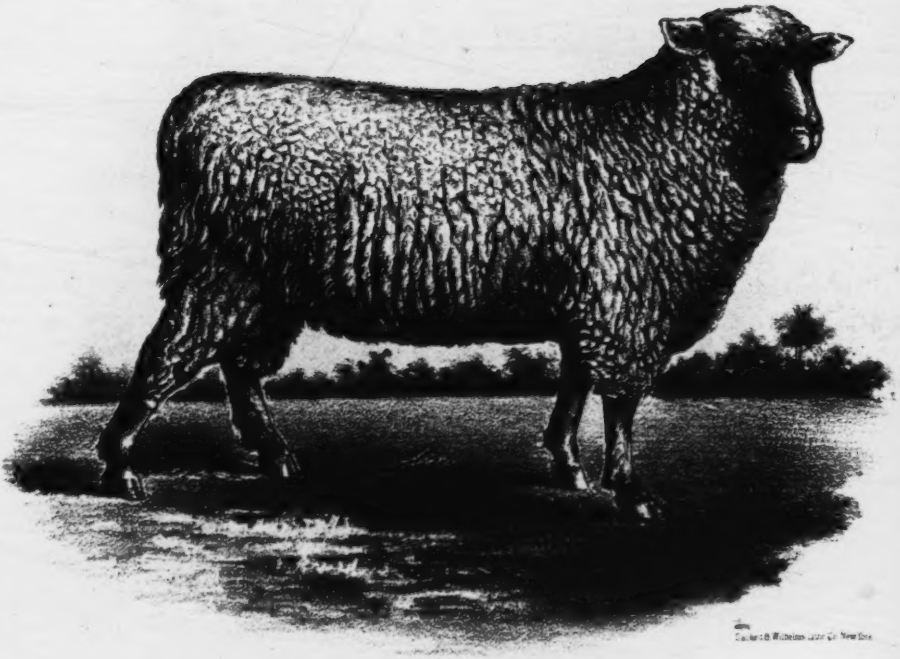
The Hampshire breeders, as a rule, selected the largest, coarsest, and blackest faced Sussex or Southdown rams, which it was thought would suit the coarse sheep with which they had to amalgamate. How many crosses were made is not known, but enough materially to alter the character of the breed, to cause the horns to disappear, and to change the color of the face from white to black; to impart a more compact form, a broader back, rounder barrel, shorter legs, and superior quality altogether, and yet preserving the hardiness and disposition to make early growth, which the original flocks possessed, and with it the large head and Roman nose which form so distinguishing a character of the Hampshire Downs, and which are derived from the original breed. Having thus formed a sheep desirable in every respect, except the size of the head, the breeders began reducing the size of the head, which, by careful selection, was accomplished, and finally a breed was formed or rather established admirably adapted to the system of fattening off at earlier ages than formerly.

The Hampshire sheep may therefore be instanced as an example of successful crossing, and as a proof of what can be done by the male parent in changing in a very few generations the character of the originals, and yet retaining some of its good qualities, thus forming a breed more intrinsically valuable than either source from whence it is derived.†

Mr. Spooner had no reason to believe that after a few generations the Hampshire breeders continued to use the Southdown rams. As

*The Hampshire or West Country Down Sheep, by E. P. Squarey.

†Spooner on Cross Breeding. Journal of the Royal Agricultural Society of England, Vol. xx.



AFTER CURTIS.

HAMPSHIRE RAM "BARON."
IMPORTED BY JAMES WOOD, NEW YORK.

soon as the Hampshire's horns were gone, to which perhaps the Berkshire Notts contributed, and the white face had become black, they employed their own cross-bred rams with their cross-bred ewes, and eventually the Sussex or Southdown blood predominated in the Hampshire sheep.

It may be noted here that in Wiltshire a different plan was pursued. Here the same large, flat-sided, uncouth horned sheep, whose ancestors were its denizens in the days of the Roman occupation, roamed over the Wiltshire downs. Their breeders began with the Sussex ewe and crossed with the Hampshire ram, while the Hampshire breeders used the original horned ewe and the Sussex ram.

The early improvement of these sheep then, as we have seen, was due to many farmers acting on various lines. Prominent among those of a later day for skill, sagacity, energy, and care, was Mr. William Humphrey, of Oak Ash, near Newbury, who was first to perceive the results likely to follow the infusion into the Hampshire Down of the blood of the largest and best fleshed of Jonas Webb's Southdowns. To him, probably, for the care he exercised, the ability he displayed, and time and money expended, is due the present almost perfect animal known as the Improved Hampshire Down. Others followed in the line laid down by Mr. Humphrey, so that greater uniformity was arrived at, a uniformity perhaps unequaled among the flocks of any other Down breed.

The plan pursued by Mr. Humphrey is known and is full of instruction to the breeder and of interest to all intelligent readers. About 1834 or 1835, in forming his flock, he purchased the best Hampshire or West Country Down ewes he could meet with, using the best rams he could get of the same kind until the Oxford show of the Royal Agricultural Society. On examining the different breeds exhibited there he found the Cotswolds were beautiful in form and of great size, and on making inquiries as to how they were brought to such perfection, he was informed that a Leicester ram was coupled with some of the largest Cotswold ewes, and the most robust of the produce were selected for use. The thought struck him that his best plan would be to obtain a first-rate Sussex Down sheep to put to his larger Hampshire Down ewes, both being of the short-wooled breed. He thus determined to try an improvement in the quality and form of his flock, still retaining the size and hardihood so necessary for the low lands and cold exposed hills of Hampshire. With this object in view he wrote to Mr. Jonas Webb to send him one of his best sheep, and Mr. Webb sent a shearling by his favorite sheep Babraham, which made some good stock out of his larger ewes. He went down the next two years, and selected for himself, but the stock did not suit his taste so well as the one Mr. Webb had sent him, and he did not use them. He then commissioned Mr. Webb to send him the sheep which obtained the first prize at Liverpool, and from these two sheep, the first and the last, by marking the lambs of each tribe as they were dropped, then coupling

them together at the third and fourth generations, his flock was made. Not having used any other blood on the male side for more than twenty years, he found some difficulty at first, when putting the first-produce ram to the first-produce ewe, the lambs coming too small to suit his customers. To obviate this difficulty Mr. Humphrey drafted out the finest and smallest bred ewes, replacing them with the largest Hampshire Down ewes he could find that suited his fancy, still continuing to use the most masculine and robust of his rams to keep up size. Some of his friends advised the use of a large, coarse ram to these small ewes to remedy the defect, but the larger ewe seemed to Mr. Humphrey the better way, and that course he pursued. He got rid of his smallest ewes and replaced them with larger ones, which gave him what he thought to be an advantage. Then using no male animal but of his own blood, the pedigree of which he knew for more than twenty years, he succeeded beyond his expectations. His object was to produce a Down sheep of large size with good quality of flesh, and possessing sufficient strength and hardiness to retain its condition while exposed in rough and bad weather to consume the root-crops on the cold hills. Independently of the value of the Hampshire or West Country Down in an agricultural point of view for such a locality as Hampshire, they produce when slaughtered a valuable carcass of mutton, giving the consumer a good proportion of flesh to the fat, which is a point not sufficiently looked to in the case of many sheep.

A later breeder than Mr. Humphrey is Mr. Rawlence, of Bulbridge, near Wilton, who, since 1863, has maintained and increased the reputation of the Hampshire Down, having obtained a large number of prizes at the Royal Agricultural Society, the Smithfield Club, the Bath and West of England and local shows. The original flock from which Mr. Rawlence's flock descended was of the Sussex breed and of moderate quality. He began by drafting all the small and delicate ewes, and the remainder were crossed with rams of the Hampshire breed. He bred from their produce for two or three years and then had another cross with the Hampshire, still continuing to cull defective ewes. After he had obtained considerable size from the infusion of the Hampshire blood, he had recourse to some of the rams bred by Mr. Humphrey, the produce of the Jonas Webb Southdowns and the large Hampshire ewes. Mr. Rawlence then used his own rams, and also frequently purchased a few of the best Hampshire ewes he could get, and put his own sheep to them and used their lambs. He also put a Humphrey ram to some of his best ewes, and selected rams from their produce, thus getting fresh blood without making an entire cross. Other Wiltshire breeders have generally followed the system practiced by Mr. Rawlence, and the Southdown flocks of Wiltshire and Dorset have gradually merged into the improved Hampshire Downs.

The improvement of this sheep has its lesson in giving an illustration of "what breeders can accomplish in preserving vigor of constitution

and general hardihood, and in adding to them the desirable qualities of early maturity, disposition to lay on flesh with fat and lean properly intermingled, and symmetry of form, with a most useful and valuable fleece of wool."

James Wood, of Mount Kisco, New York, who has made extended examination of the districts occupied by these sheep, and given careful study of them, gives us the best description of the improved Hampshire Down and its management: His head is rather large, with a Roman face; neck long and usually well set on; shoulders sloping; brisket deep, with abundant room for the vital organs; back straight, with a good spring of rib going around the barrel; loin broad; quarters long and broad; hams round and heavy; legs bony and strong, and feet large and open, with a tough sole and crust. The face and legs are the blackest of any of the Down breeds. Gray faces are avoided. The wool is of medium length and strong fiber. It is used for making cheviots, tweeds, and such business cloths, and commands the top prices. Flocks of breeding ewes average about 7 pounds to the fleece. Mature rams weigh 300 pounds and ewes something over 200. The peculiar advantages claimed for the Hampshire are constitutional vigor, a greater exemption from foot-rot than other breeds, rapid growth, early development, and excellent fattening qualities of the lambs; to which, last but not least, must be added that quality which, in the opinion of many, gives to this sheep his greatest practical value, and the one which above all others commends him to the average American sheep-raiser.

Mr. Wood says:

> It is his extraordinary prepotency—that power which enables him to stamp his characteristics with unerring certainty upon his offspring. This is especially important where the blood is crossed with common ewes, either for the sale of the first cross or for grading up a flock so as to make them as good as pure bred for all but breeding purposes. The first cross so strongly resembles the Hampshire that n many cases it takes a good judge to distinguish them.

The Hampshire is scarcely as prolific as the Dorset horned ewes, but under good management and more even and liberal feeding the yield of lambs has been increased. The ewes are usually bred from for three years, and, as full-mouthed ewes, are sold at the autumn fairs to breeders of early lambs, who generally put them to a Lincoln or Cotswold tup and fatten the ewe and lamb together. The first cross produces an animal with great aptitude to fatten, and if kept till they become shearlings they carry a large quantity of mutton and wool.

The general management of these sheep is that which prevails in the south of England, where spring and grass come early. They are kept in the open fields throughout the year. The breeding ewes are separated by midsummer and the rams are put with them at such time, from July until the middle of September, as best suits the purpose for which the lambs are to be bred. Ram lambs are almost invariably used, by which it is believed the early development of the breed has been

aided. Those lambs which have the strongest masculine characteristics and show the greatest vigor and force are selected. The best breeders keep the rams and ewes apart at night; others alternate their rams with the flock, thus giving to each an opportunity for recreation, while still others turn a greater or less number of rams in with the ewes, all together, and leave them to roam at their sweet will. Meanwhile the ewes are given such food as will put them in good condition, a matter considered of much importance. As winter approaches turnips are given, and during the winter months hay and straw, cut together, with bran and malt dust, to which is sometimes added a little oil cake. When lambing time arrives some sheltered spot is selected and inclosed with hurdles, convenient to the field in which are the turnips or Swedes that are to be fed. Storms are severe and the exposure great, but the losses in the lambing yard are seldom serious. If the weather is fine the lambs are allowed to go out on turnips in a few days after they are dropped, but some farmers keep them in the lambing yard or pen for two or three weeks, the ewes being fed there. The ewe and lamb are generally kept on turnips and hay until about the first week in April, when the water meadows or irrigated pastures being ready, they go there by day, feeding on the new grass, and are taken at night to be folded on Italian rye-grass, rye, winter barley or trifolium, the tup and wether lambs getting a little cake or corn. When vetches are in flower they furnish a very valuable food for the growing lambs. On farms where there are no water meadows there is usually a larger quantity of late Swedes provided, after consuming which the sheep are kept on rye, winter oats, barley, mangolds, and trifolium until the vetches are in flower. Lambs are generally weaned about the first or second week in May, when they are kept on sainfoin or clover by day and are folded on vetches by night. When the vetches give out they are fed rape or cabbages with the aftermath clover or sainfoin. The sale lambs have large folds of the above, the ewe lambs or the stock ewes clearing up any food which they leave. Grass, cabbages, rape, and clover are the reliance in summer and until such time in the autumn as the turnips are ready. Ram and wether lambs have the choice of everything, and are first served, the ewe stock cleaning up after them. By this management the wether or sale lambs attain great size, and realize high prices at the early fairs. Many go to the butchers as early spring lambs.

Shearing takes place in May or June, when professionals in that line go through the country in parties of six to ten, doing the work at so much per hour. After shearing the full-mouthed ewes are overhauled, and a draft is made of all such as are not desired for another crop of lambs. These draft ewes are fattened upon the farms, or as store sheep are disposed of at the fairs to go into other counties, to be fattened there or to produce one crop of cross-bred lambs. Here, as in other parts of England, the keeping of breeding flocks and the fattening of sheep are considered quite distinct lines of business.

These sheep were introduced into the United States, principally into Virginia, some time before the war of the rebellion, and many fine flocks suffered destruction at the hands of hungry soldiers. Within a few years past they have grown in popularity, and many importations have been made. In 1855 Thomas Messenger, of Great Neck, Long Island, imported a small flock from England, and the descendants have been widely distributed throughout the country, and particularly in New York. In February, 1881, Henry Metcalf, Canandaigua, imported the Hampshire ram "Shepherd's Pride, 2d," bred by Mr. Stubbs, of Aylesford. At 1 year old he weighed 201 pounds, and the fleece of the first shearing weighed 9 pounds.

In 1891 Mr. S. R. Bradley, of Nyack, imported two rams and five ewes, pure Negretti Merinos, descended from the flock brought by George III from Spain. They were bought from Sturgeon & Son, Gray's Hall, Essex, England, for the purpose of breeding, and with the idea of raising a flock from this celebrated strain.

New York disputes the claim of Vermont for the first direct importation of the Dorset sheep, it being stated that the first direct importation of those sheep into the United States was made by Adin Thayer, Hoosick Falls, June 10, 1887, and were landed at Boston, Mass. This importation consisted of 12 sheep selected from the well-known flocks of Henry Mayo, Cokes Frome, Dorchester, England. On September 4, 1887, Messrs. Woodward & Jaques, of Wrights Corners, made an importation, and again in July, 1888. Other importations have been made and these original flocks drawn upon for new ewes, so that of the eighty-eight flocks of thoroughbred Dorsets known in this country, distributed over sixteen States, New York contains about twenty of them. Mr. J. S. Woodward, who raises 800 head of sheep per year for the market, and who has tried nearly every breed as sires to cross on the so-called Michigan Merino ewes, says none has given such good results as the Dorsets. In the summer of 1890 he put with a flock of 126 ewes 3 rams, one each of Shropshire, Hampshire, and Dorset, all faring alike. When the lambs came, of the first 60, only 3 had black faces, and of the whole crop more than three-fourths were Dorset crosses, and a much larger proportion of the twins showed Dorset blood; besides, the Dorset lambs were much more vigorous.

The most recent acquisition to the mutton sheep of the State and the United States has been the introduction of the Black-faced Suffolk or Suffolk Down. This breed is a cross between the old Norfolk Black-faces of the last century (see page 46) and the Southdowns, probably improved, think some, with a Hampshire Down cross. It was first described in August, 1883, by H. Kaim Jackson as a proper "nigger," so far as face and legs go, and the blacker these were the better. The meat was said to be juicy and lean, and in much request in some places. It was claimed for the breed that it was active and hardy and could live where other breeds would famish.

The Suffolk Flock Book says that this breed of Suffolk sheep existed early in the present century, and had been formed by crossing the original Norfolk ewes with improved Southdown rams. The great excellence of the Southdown it is unnecessary to set forth. The old Norfolks were early noted as producing mutton "for the table of the curious, no superior in texture or grain, flavour, quantity and colour of gravy, with fat enough for such tables," and also of bearing fine wool, and of their great activity, bearing hard driving, and success as nurses. The elements for crossing were certainly good, but the cross was not greatly extended. It has, however, been perpetuated for many generations with rigid adherence to purity of blood, some flocks of the present day dating back to 1810.

CHARACTERISTICS OF THE SUFFOLK SHEEP AS THEY NOW EXIST.

They may be briefly described as black-faced, hornless sheep, with clean, black legs, closely resembling the Southdowns in character and wool, but about 20 per cent larger and proportionately longer on the leg. They excel in the following points:

Fecundity.—Thirty lambs reared per score of ewes is a frequent average.

Early maturity.—If well grassed they are fit for the butcher at 10 to 12 months old, and the ram lambs are so forward at 7 to 8 months that they are preferred as tups by most breeders to older sheep.

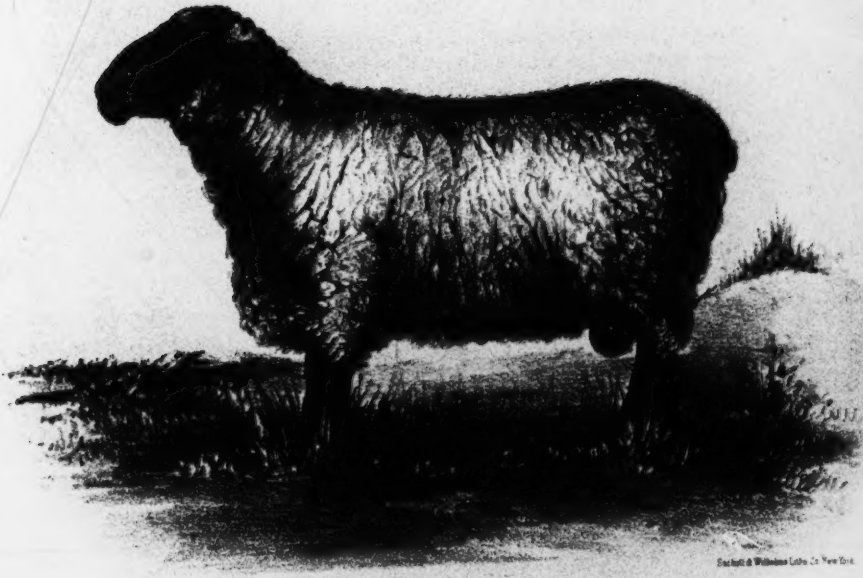
Hardihood.—They will get a living and thrive where other breeds starve.

Mutton.—The quality is super excellent, with an exceptionally large proportion of lean meat, and commands a ready sale at top prices.

The distinguishing feature of these sheep is their head. It is long and narrow, has an exceedingly clean, graceful appearance, and always as black as jet. A breeder of them states that he had yet to see a single variation. The newly fallen lambs are a peculiar sight, as they invariably come spotted or black; but while the head and legs retain their inky black color, the wool grows out white as with the other Down breeds. There is rarely any wool on any part of the head, which, being clean and coal black, with long, black ears, gives the Suffolk a strong individuality.

In the report made on the exhibition of live stock at Preston, England, 1885, Jabez Turner says of the Suffolk sheep exhibited by Mr. Joseph Smith, of Thorpe Hall, Hasketon, that "these are evidently a variety of much merit, combining a large quantity of mutton of fine quality, with a fleece of more than medium weight, and being also extremely valuable for purposes of cross-breeding."

Mr. Smith had the prize flock of English Suffolks, which in 1886 consisted of 260 ewes of medium size, comprising 42 shearlings, 37 two-shear, 140 3 and 4 year olds, and 40 varying in age from 5 to 8 years. Six rams were used, all bred on the farm from selected ewes. The faces of these sheep, with the legs, are uniformly black, show a good preponderance of full, bright eyes, and the black color on the faces of many of them fairly shines. They have close fleeces, free from gray, only 12 being reported as having some gray on the tails.



HAINES, DEL.

SUFFOLK RAM.

FROM "AMERICAN AGRICULTURIST," MAY, 1850.

They have fine-boned legs, free from wool below the knees and hocks. This flock was established in 1859, since which time but few ewes have been bought. It is a noted flock, and has been freely drawn upon by sheep-breeders of France, Germany, Russia, and Canada, and, to a very small extent, by the United States.

There are two flocks of Suffolks in Canada, one owned by Blanchard D. Sewell, of Fredericton, Province of New Brunswick, the other by the Ontario Agricultural College at Guelph. Mr. Sewell imported 20 ewes in the fall of 1888 from Joseph Smith's flock. In the spring of 1889 they brought him 38 lambs, 37 of which he raised. In the spring of 1891, out of 32 ewes he weaned 58 lambs, and good ones. He sold some early lambs as Easter lambs, one month old, weighing 22 pounds and upwards, for which he received $5 per head. Mr. Sewell considers the Suffolks as good sheep for Canada, standing the cold well, and yielding above the average clip of wool of a superior quality, and second to none in mutton. Under date of November 2, 1891, he writes:

I have sheep by me now, registered Suffolk, which have had their lambs killed for sale in the spring, with a second crop now 2 months' old running with them. I consider them as producers of early lambs and good quality superior to horned Dorset.

Mr. Sewell clips 9 pounds per fleece on the average. His rams run from 200 to 240 pounds.

During a visit to England, in 1887, Mr. M. B. Streeter, of Brooklyn, an owner of Southdowns from boyhood, and an admirer of the dark-faced Down families, saw some of the Suffolks at the Metropolitan stock yards, near London, and was struck with their remarkably ornamental quality, and, in 1888, made an importation from the prize stock of Joseph Smith, of Hasketon. One of his yearling ewes (1 year 9 months old) just after coming off the vessel weighed precisely 200 pounds. A ram lamb, 9 months old, weighed 195 pounds. In the spring of 1890 a 7-weeks-old lamb weighed 85 pounds, and it was a twin. In the spring of that year he had 2 lambs for every ewe. One had a single lamb and one had 3, which kept up the average. In the spring of 1891 his 5 imported ewes produced 11 lambs, and in the spring of 1892 the same 5 ewes produced 14 lambs.

As to the product of wool, in a letter to the writer of this article, under date of May 7, 1892, Mr. Streeter says:

To be candid with you, I think these sheep have just one fault—they are not heavy shearers. Of all the heavy mutton breeds they are perhaps the most natural, or the least manipulated by a long course of selection to produce show points. If I understand rightly, this breed has been developed under conditions that called for much rustling for food, and they are somewhat leggy and bare of wool underneath. I like them as well as I ever did, and am willing they shall shear light because of other undoubted advantages.

Mr. Streeter's flock is at Berlin, Rensselaer County, and consists of 15 ewes besides his last crop of lambs. It is the only flock known in the United States.

The New York statistical agent for the Department of Agriculture reported in 1888 that "When land is as high as the average farm in New York there must be a broader foundation for sheep husbandry than the fleece. The body of the sheep as a food product must make the foundation of this important industry;" and again, in 1890:

There is an increase in the number and value of sheep. Many sheep have been purchased from Ohio, Michigan, and Canada, and have been distributed about the State in small flocks. The high price of lambs for mutton and a growing appreciation of mutton as a meat food has helped to bring this about. The need of more animals on the farms to make manure has also been a potent influence in making quite a boom in sheep. But for dogs many more sheep would be kept in small flocks. It seems to be a common characteristic of farmers to sell out when things are going down, forgetting that their own acts send them lower, and to buy in when the price is possibly rising. Last year there was a scramble to sell sheep, and this year to buy; whereas sheep should really be an established and permanent factor on every farm. It is a gratifying fact that they are once more becoming appreciated, both for mutton and wool—the first being the more important consideration to the New York farmer.

Fortunately for the New York sheep industry, both for mutton and wool, the supply of thoroughbred flocks of all the breeds is ample; in no other State is it excelled in pure stock. The sheep of the State are remarkably healthy. Breeders insist on a high standard and emulation keeps it up. The raising of sheep is now, more than ever before, one of the factors of farm life; not the only one—it has become part of a system of diversified agriculture.

Sheep and wool of New York, 1840 to 1890.

Year.	Number of sheep.	Wool.	Average weight of fleece per head.
		Pounds.	*Pounds.*
1840	5,118,777	9,845,295	.....
1850	3,453,241	10,071,301	2.91
1860	2,617,855	9,454,474	3.60
1870	2,181,578	10,500,225	4.86
1880	1,715,180	8,827,195	5.14
1890	1,548,426	8,702,154	5.62

The figures as given by the Statistician of the Department of Agriculture show a falling off in number of 154,843 sheep from January 1, 1890, to January 1, 1891, although the State agent reported that the keeping of sheep was demanding general attention, and but for the ravages of dogs they would be doubled could the stock be obtained. There was a slight increase in the number during 1891, and the average value was somewhat higher. More were being kept than formerly, as lamb and mutton were in demand at all times at paying prices. More full-blood rams were used and there was a strong tendency to improve the sheep for mutton.

NEW JERSEY.

Some of the choicest importations of Merino sheep were taken up in New Jersey. Merchants and others of wealth in the two cities of New York and Philadelphia formed flocks and entered extensively upon the business of wool-growing when wool was in demand, and we have frequent notes in the papers of the day of flocks projected and schemes for buying large tracts of mountain land in the northern counties for the purpose of converting them into sheep grazings, but of the subsequent history of these undertakings little is known. Some of the Livingston sheep were early introduced into the counties of Bergen and Essex.

The most noted flock of the State, and one of the best in the United States, was that of James Caldwell, a merchant of Philadelphia, owning a farm at Haddonfield, Gloucester County. As some reference will be made to this flock in future pages we here give entire Mr. Caldwell's history of it as communicated in a letter to William R. Dickinson, April 11, 1826:

In the fall of 1806 I purchased 1 ram and 2 ewes from Col. Humphreys' Merino flock, for which I paid $300. The ram was accidently killed a short time after. In the spring of 1807 Mr. Basse Muller imported into the city of Philadelphia 6 Merino sheep, which he said had been obtained by him from the flock of the Prince of Hesse Cassel. The sheep were all remarkably fine animals, and at Mr. Muller's request I took them to my farm, and kept them until they had recovered from the effects of the voyage and were in a condition to travel. I then prevailed on Mr. Muller to let me have one of these rams, and to name his own price. He consented to do this as a personal favor, and did not consider it a sale when he named $100 as about sufficient to defray the additional cost and charges. This sum was paid by me with great satisfaction, although at that time I would rather have had a ram of equal quality direct from Spain, thinking it best to procure the water from the fountain head, as less liable to impurities than farther down the stream. A sheep seven-eighths Merino may have all the external qualifications of a full-blood Merino, but no experienced breeder would think it equally safe or desirable to breed from such an animal when the genuine full-blood can be obtained. I would prefer one of the best horses of Arabia for speed and bottom to the most beautiful English racer, if I desired to propagate and perpetuate those qualities. And even now I would rather cross with the best Spanish ram than with the best Saxon Merino, unless I knew that the Merino had been kept pure and unmixed with Saxony. The contrary practice would be gradually, but certainly, breeding back again into the common stock of the country. I have, however, every reason to believe that the sheep which were imported by Mr. Muller were perfectly pure Merinos, and I think Columbus (a noted ram) was the first descendant from Mr. Muller's ram and one of Col. Humphreys' ewes. You are certainly wrong in thinking Columbus was the best ram in my flock. It was Americus that sheared 12½ pounds of wool, which I sold for $25 cash. It was Americus that weighed 148 pounds. Americus was begotten by Columbus and was, in my opinion, in all respects, a superior sheep. I now think Americus was the best Merino ram I have ever met with, although I have traveled from Boston to Alexandria for the purpose of examining all the early importations from Spain, and of purchasing the best I could find. I have expended more than $40,000 upon Merino sheep, but never could find one equal to Americus in every respect. I do not remember the weight of Columbus, but his fleece never weighed more than 9½ pounds, which I sold for $2 per pound. Mr. Howell gave me $300 for Columbus at a time when the best

imported Spanish rams were to be had for $50. The same Mr. Howell gave me $500 for Americus. I presume you have mistaken these two sheep.

In addition to this foundation Mr. Caldwell purchased in September, 1810, 190 Merino sheep, and a few days later some more, all of which were added to his flock at Haddonfield. These last purchases were of the Jarvis importations, and the first, at least, were Paulars. He purchased also some of the Infantados imported by Capt. Charles Stewart. Other choice sheep were added to the flock, and it became noted as one of the very best in the country. In 1815 it passed from Mr. Caldwell's hands to Mr. Samuel L. Howell, and was subsequently sent to William R. Dickinson, of Ohio, and from it originated many of the best flocks known in Ohio and Western Pennsylvania and the Pan Handle counties of Virginia.

The Samuel L. Howell mentioned by Mr. Caldwell was a resident of Ashfield, Gloucester County, and was an early importer of Merino sheep and had a large and choice flock before he made the purchase of the Caldwell flock. In June, 1813, he published a valuable article on the diseases of the Merino that had come under his notice—worm in the head, prolapsus vaginæ et uteri, abortion, cholera, and foot-rot. Mr. Howell's fine flock, or a part of it, also found its way to Ohio.

The Jarvis importations found many purchasers in New Jersey, and the liberal action of the legislature in encouraging woolen manufactures gave the sheep a general distribution. Miles Smith, of New Brunswick, imported 70 from Lisbon in May, 1811, and during the year they could be procured in almost every section of the State, although they were held at high figures. By a return made to the State authorities in 1814 it appears that there were then in the State 285,049 sheep, of which 3,807 were full-blood Merinos, 25,826 mixed bloods, and the remainder common sheep, and that these sheep supported the life of 56 woolen factories and 129 carding machines for country business. Gloucester, Essex, and Morris counties led. We are otherwise informed that in the latter a worthy minister of Mendham made in the preceding year from his flock of Merino sheep a sufficiency of cloth for his entire family, and sold $500 worth to others.

Among those who had flocks of Merino sheep was Hon. John Rutherford, of Bergen County, formerly a United States Senator. He had a "home flock" in Bergen and a "mountain flock" in Sussex, and following the practice of Spain these were kept as migratory flocks. At shearing time the flocks were driven from one feeding place to another more distant from home. The flocks aggregated nearly 600 sheep. The summer migration of these flocks was attended with some ceremony, and the transfer from their winter quarters in Bergen to the hills of Sussex in summer was chronicled by a Sussex paper as "presenting a lively picture of the patriarchs of the primitive ages." The flocks of the patriarchs, however, were considerably larger. We have a record of the shearing of 340 of these sheep, giving 928 pounds of wool. Another

shearing, in Essex County, June 21, 1815, of rams, ewes, and lambs gives this result: Twenty-six sheep gave 186¼ pounds, an average of 7⅛ pounds a head; 2 bucks and 6 ewes gave 73½ pounds, an average of 9$\frac{3}{16}$ pounds; 12 lambs born in the spring gave 30 pounds.

In the same county, at Rahway, December, 1824, a farmer writes:

My flock consists of 550, and the yield is as nearly as can be 4 pounds to the fleece the flock round, when shorn without washing. When washed on the back 3 pounds. I began twelve or thirteen years ago with a few Merinos, crossing them with an old flock of coarse-wooled sheep, being careful to preserve the finest, and now have the flock in such a state that the wool is equal to the flocks of Spain.

When the woolen manufacture succumbed after the peace of 1815, and under the great importation of woolen goods from Great Britain, New Jersey suffered intensely and her Merino flocks diminished rapidly and to such an extent that in 1820 there were but few remaining. The woolen factories that were so plentiful and prosperous in 1814 were, in 1821, so few in number and so poor as to workmanship that New Jersey wool was sent to Steubenville, Ohio, there to be manufactured into cloth and returned to the State or sent to New York, Philadelphia, and Baltimore. There were but few full-blood Merino flocks then remaining; most of them had been sold to go westward or converted into mixed flocks by the crossing on them of mixed Leicester and Teeswater rams, by which the whole sheep husbandry of the State was radically changed and fine wool growing was superseded by mutton and lamb raising for the New York and Philadelphia markets. By 1830 the Merino flocks had almost disappeared; but a year or two before this Merino sheep were selling for $3 to $6, the best rams bringing the latter price. Many flocks, among which may be mentioned Caldwell's, Howell's, and Judge Griffith's, had been transferred to the cheaper lands of Ohio and western Pennsylvania. The Saxon Merino found but little favor in New Jersey and the French Merino came into the country after the State had become so thoroughly committed to the mutton sheep that it was scarcely noticed. In 1840 the Merino was entirely eliminated from the sheep husbandry of New Jersey. There was an occasional instance where a farmer kept a half dozen or so as a curiosity to be shown at county or State fairs, but as part of the economy of the farm they were not considered, and Gloucester County, which in 1814 supported choice flocks, could not show a score even of mixed grade, and the fields that fed the choice importations from Spain, collected with such care and at such expense by James Caldwell, were now feeding low-grade descendants from these same sheep, shipped from Ohio to be fattened for the Philadelphia butcher and sold in the market at from $5 to $6 each. By 1850 a similar system prevailed throughout the State. Flocks were kept principally for producing early lambs, which sold from $2.50 to $5. Many grazers, however, were in the habit of buying a considerable number of Western sheep, principally wethers, which they bought in June or July from $2 to $3

and sold in the fall and winter as high as $4 to $16. But the system that has been carried to great success in the State is that of raising both early lambs and fattening for fall mutton. Nowhere are sheep and early lambs handled with such profit and the return made so quickly.

It was fortunate for the sheep husbandry of the State that the farmers saw, at an early day, that there was more profit in mutton that was always in some demand than in wool which sometimes would not sell, and when they abandoned their Merino flocks the abandonment was permanent and absolute. Their nearness to the large markets of New York and Philadelphia gave a permanency to the demand for mutton that could not be expected of wool.

The marked growth of the mutton industry in the State may be fixed at about 1830. In the years following many Leicester sheep were grown in the State and fattened for market. In after years the Southdown came in and remained the favorite. The greatest development of the Southdown was made by J. C. Taylor, of Holmdel, Monmouth County. Mr. Taylor began raising sheep in 1834, following the custom then in vogue of buying a few sheep from drovers that came along in early autumn with flocks from New York, Pennsylvania, and Ohio, of the character of the ordinary sheep of those States, in which fine wool and a light carcass formed the predominating element. These were bought from the drovers, and with a few steers, also purchased in the fall, were carried through the winter mostly upon coarse feed, such as cornstalks, grazed and fattened through the summer and then disposed of to make room for a new supply. Lambs were sold in the spring, but they were not a primary consideration. In 1848 Mr. Taylor came to the conclusion that an improvement could be made upon this system by which butchers' lambs could be bred more profitably by the introduction of better blood on the part of the sire, to secure greater size and earlier maturity in the offspring. He purchased some Southdown rams in 1848 that had been prize-takers at the American Institute show, and found this cross upon the common ewes fully as advantageous in every respect as had been anticipated. The neighbors had to keep up with his improvement, consequently he had a ready local demand for all the pure Southdown lambs he could spare. Ram lambs, purchased by them at $15 each, were found to more than repay their cost in the increased value of the butchers' lambs. From $6 to $7 advance upon each ewe purchased in fall with this system was realized by the best farmers—say, $4.50 for the lamb, $1 profit on the ewe by fall, and $1 for the wool. Mr. Taylor and the best farmers fed the ewes about three months with half a pint daily of corn meal, together with hay and cornstalks, but some gave good clover hay only. They were allowed to run on grass as soon as it gave a good bite and the lambs were sold when ten to fifteen weeks old. The earliest lambs from this Southdown cross dressed from 50 to 55 pounds, but at three months or over 70 pounds. The

lambs commenced to drop about March 1 and were fit for market June 1. The ewes were fit for market September 1.

Mr. Taylor did not confine his sheep husbandry to growing lambs and mutton, but formed a Southdown breeding flock not excelled in the United States. In 1854 he made an importation from England, and in 1856 purchased fully one-fourth the sheep disposed of at Col. Morris' sale in New York, and in November of this year received a ram and four ewes from the celebrated Southdown flock of Jonas Webb. He paid $500 for the ram.

In 1858 Mr. Taylor sold 8 rams and 2 ewes to go to California, at an average of $110 each, and the fame of his flock extended throughout the whole country and sales from it were many to improve flocks in every section. On July 10, 1861, the famous Southdown flock of Jonas Webb was sold at auction at Babraham, England, and marked an era in sheep husbandry long to be remembered. Persons to the number of 3,000 were present, embracing the nobility, the leading Southdown breeders of England, and agents from every quarter of the globe. Competition was keen and the prices higher than ever before recorded. Nine hundred and sixty-seven sheep sold for $54,610. The highest-priced animal was a 2-year old ram which was bought by Mr. Taylor for $1,300. He bought, also, a yearling ram for $500 and another for $275, and 5 ewes for $187.50.

In 1862 Mr. Taylor had 75 breeding ewes, 25 of which were imported, 16 ewe lambs, and 17 ram lambs. His stock rams, all imported, were 5 in number. In September, following the English custom in that regard, he had a sale and letting of his sheep. His rams rented at an average of $50 each per year, and his ewes sold at an average of $37.80 each. By his annual sales and lettings the Southdowns were extended throughout the State, and many from his flock found their way to New York, Pennsylvania, and Ohio, and the system of sheep husbandry which he did so much to improve enriched many farmers and farms.

Another Southdown importer of that day was George Hartshorne, of Rahway, N. J. He imported the famous ram Young York and bred a fine flock, descendants from which still exist in the flock of Jeremiah McCain, of Mount Herman, Warren County. In 1839 Mr. McCain purchased, in Hunterdon County, from an imported Leicester flock, a ram and 2 ewes, and their descendants carried off premiums at the State fair of 1884. In 1861 he bought 4 Southdown ewes of Mr. Hartshorne, sired by Young York, out of imported ewes, and took these ewes to Mr. Taylor's rams, and raised 6 lambs from them, thus establishing a flock of Southdowns, which has carried away many premiums at county and State fairs. In 1863 Mr. McCain went to Canada and bought a ram and 6 ewes of the Cotswold breed, all large and fine in quality. The ram clipped 13 pounds of washed wool and the ewes 9½ pounds each. This was the foundation of Mr. McCain's Cotswold flock, to which imported stock was added, and which has been bred from with great success.

In 1876 and in succeeding years large numbers of the English breeds were imported into New Jersey, and the State had in possession nearly all the breeds profitable to keep. There were Southdowns, Oxford Downs, Hampshire Downs, Shropshire, and Cotswolds, and some Merinos. At the State fair in 1884, and in subsequent years, all these breeds have been represented, and the flocks are maintained to supply breeding rams for other flocks and to cross on grade sheep for early lambs.

The system, so succesfully inaugurated by Mr. Taylor, of raising cross-bred lambs for the early market and fattening the ewes for fall, still prevails in some parts of the State, and is profitable even on lands costing $100 and more per acre. But few sheep are grown to maturity in the State. The flocks consist principally of ewes purchased from the surplus flocks of Pennsylvania, western New York, and Ohio, sometimes Michigan, at $2.50 to $5 per head, in July or August. These are pastured as long as weather permits, served with an Oxford, a Hampshire, a Shropshire, or a Southdown ram; fed well on hay, cornstalks, and sometimes roots, during the winter; sheared, early in the spring, of 5 to 6 pounds of wool; their lambs sold in May and June, sometimes as early as April, at $5 to $10 each, and if in March, at $12, and the mother ewes meanwhile are fattened and follow the lambs early in the summer; some few are kept until early autumn. This system disposes of the whole flock within a year, at a cash profit of $5 to $12 on each ewe purchased, besides the manure, which adds to the fertility of the farm.

A veteran in this line of industry thus writes in the report of the New Jersey State Board of Agriculture for 1886:

> Good, strong, medium wool common ewes should be procured in July, if possible, and a young and vigorous thoroughbred Southdown buck should be turned with them immediately after harvest, allowing not more than 25 ewes to 1 buck, if a lamb, and not over 50 to a yearling. By this practice the lambs will be dropped between the 15th of December and the 15th of January. If the ewes are well fed through the winter, and if the lambs have a free and separate access to cornmeal, whole oats, wheat bran, and linseed meal as soon as they are old enough to eat they will, when 6 weeks old, up to 3 months old, weigh from 30 to 60 pounds per head. I have known some farmers to sell lambs for St. Patrick's day as high as $12. These prices do not last long, and are obtained by but few. I know of farmers who have disposed of their lambs from 40 ewes by the middle of April, bringing from $6.50 to $10 per head, averaging a little over $8 per head. After the lambs are sold the ewes will fatten and will bring a larger price than at any other time of the year, from $1 to $10 more than cost. Now, estimating the gain in price, the value of the fleece and manure, to balance the cost and trouble of feeding, the lamb can be reckoned as clear profit. If, however, the lambs are dropped later and sold for less prices, say $5 or $6 each, the profit will be proportionally less, but there will be still a profit equal to the price obtained for the lamb on every ewe that raises one, and it is not unusual for a flock of ewes to average one lamb apiece.

It is no uncommon thing for the New Jersey farmer to purchase 20 ewes at $5 each, making $100 for the lot, and before the expiration of the year sell the wool and lambs at $100 or more a profit of 100 per

cent on the investment, and have the original stock on hand worth as much or more than at the time of purchase.

Many of the early lambs raised in New Jersey are sold in the market in New York City when 2½ to 3 months old at $8 to $11 each, and lambs at 5 weeks old sell for $9 per head. One of the most successful and public-spirited farmers of Sussex County selects strong ewes of western grades and uses Oxford or Hampshire rams, and succeeds in getting $11 per head for ninety or more of his crop of lambs and an advance on the ewes bred from.

It is not absolutely necessary in this branch of industry that the farmer should have a large body of land. A few, who have skill in management, buy a flock of western ewes in the late summer or early fall and put them on a lot large enough only to give them exercise needed for health, and keep them through the entire period upon root crops grown on a few acres, with bran and other feeds, then sell off both lambs and mothers in spring or early summer, to begin with an entirely new stock the succeeding autumn. The only sheep remaining during the summer is a lone ram, confined to a small patch where he can graze the fresh grass. Sometimes the flock is cleaned out entirely even to the ram, a new one being purchased every season or hired from a breeding flock. In this system it is very essential that the ewes selected be sound of udder and of teat, and are not what is termed "broken mouthed" and unable to use their grinders on roots, grain, or hay. In feeding on grass the loss of a few teeth does not so much matter, but when the sheep are to be fed on harder and drier substances the loss is severely felt. Thorough mastication and good digestion are absolutely necessary to good condition in the ewe and a good supply of milk.

The ordinary and well-known mutton breeds have been raised in New Jersey for many years. The most recent introductions have been the Hampshire Downs and the Horned Dorsets. The Hampshires, though brought into the country in 1855 by Thomas Messenger, of Long Island, were extended slowly. Now they are quite widely distributed throughout the country, and pure flocks are maintained in New England, in each of the Middle, and in many of the Western States. Three flocks were maintained in New Jersey in 1891, two in the county of Burlington and one in Sussex. Mr. Martin Dennis, owner of the Sussex flock, states that the forty or fifty head comprising it are descended from three distinct importations, and that his experience of twelve years as a breeder convinces him that they are the best breed for producing a large carcass of high quality mutton, such as is now demanded in our large cities. They are a hardy sheep and stand well the extremes of our American climate, and are especially adapted to the hill counties of New Jersey and generally to our pasture lands and our methods of winter feeding. The ewes are excellent mothers, having large udders and a bountiful supply of milk, upon which the lambs mature more quickly than those of other breeds. Mr. Dennis' Hamp-

shire lambs at six months old weigh about 125 pounds. Although the hill region of Sussex and adjoining counties are especially adapted to the raising of mutton sheep and lambs, in which the Hampshires would play a prominent part, they are, nevertheless, given up to the dairy, every farmer being engaged either in selling milk to a creamery or making it into butter and shipping it to the city.

The Dorsets were first introduced into the State in September, 1887, by Robert J. Buck, of Bridgeton, and in July, 1888, by Rutherford Stuyvesant, of Warren county. Mr. Stuyvesant imported two rams and twenty-eight ewes from the English flocks of John and William Kinder. His experience with them has been highly satisfactory.

Scattered throughout the State there are many small flocks of Southdowns, kept to supply the home table and the village butcher. These flocks run from 12 to 20 and are generally healthy and hardy. The number of lambs is usually about the same as the number of ewes. Losses of lambs are rare, and when they take place the twins keep up the average. Lambs are dropped in February, and are sold to the local butchers for $4.50 to $7 per head, to be taken as wanted from June to October. Four to 5 sheep are sold with the lambs at the same price, and a like number reserved from the best lambs to keep up the flock. The wool is sold from 18 to 25 cents unwashed, the weight of the fleece running from 4 to 6 pounds. Usually the sheep are shut up every night in the year in the barn or basement sheds for protection against dogs. They are not fed when on pasture. When off pasture they receive hay, corn-meal, and, in the early spring, mangels. There is not much money profit in keeping these small flocks, but they pay for themselves in the service rendered in keeping the fields clean and in the valuable manure they furnish, and it is noticeable that wherever such a flock is kept the farms look thrifty and the grass fields green and luxuriant.

But these and other flocks are gradually diminishing. The causes assigned for the decrease are greater profits in dairy farming and market gardening, and the destruction caused by dogs. There is no farm in the State over 7 miles distant from a railroad station, and this ready access to the markets of all the principal cities in the State and to New York and Philadelphia, encourages the production of milk and cheese and every variety of garden truck, consequently fields that will yield $20 to $50 per acre annually, and sometimes much more, in these industries are not willingly consigned to the raising of sheep with the attendant risk of dogs. Two per cent of the sheep of the State are annually killed by the dogs, and there is more protection for the safety and life of these worthless animals than for the valuable sheep.

Sheep in New Jersey, 1836 to 1890.

Year.	Number of sheep.	Wool.	Average weight of fleece per head.
		Pounds.	*Pounds.*
1836	250,000	812,500	3.25
1840	219,285	397,209	1.81
1850	160,488	375,396	2.33
1860	125,228	349,250	2.58
1870	120,067	336,609	2.80
1880	117,029	441,110	3.77
1890	103,170	432,663	4.20

The continued ravages of the dogs, and the greater profits of the dairy industry and trucking, operate against an extension of sheep husbandry, and the number of sheep has slightly decreased since January, 1890.

PENNSYLVANIA.

Sheep husbandry and wool-growing have always received much encouragement in this State, both from the legislative authorities and the press. Public spirit and private enterprise responded. The vicinity of Philadelphia has been, in an especial degree, the home of fine flocks, and was early interested in the Merino sheep. The patriotic efforts of Dr. James Mease and others to introduce them have been elsewhere noted, and we have seen that some of the Humphreys sheep were owned there prior to 1810. In 1810 and 1811 over 2,500 Merinos were landed at Philadelphia, some of them being the very best that were brought into the country. At first they were not generally appreciated, but soon grew popular, and some choice flocks were formed; but the known facts concerning them are sadly defective. The papers of the day made casual reference to them, inculcated the duty of all true patriots to patronize them and the goods made from their wool, but gave very little other information concerning them. The wool sales in the Philadelphia markets show that they must have been numerous, and that their wool was of good quality as it commanded good prices. The Essex (Mass.) Register, June 22, 1811, in noticing the success of the Merino sheep, stated that the United States had 26,000 of them, and says that at a sheep shearing of Mr. Bicknall, of Pennsylvania, 62 Merino sheep of different grades, all ewes but one, gave on an average 4¼ pounds washed wool. The ram gave 8¼ pounds, and the weight increased as they approached nearer being full-blooded. There were, at an early day, some Merino flocks in Luzerne County, and in February, 1814, Dr. Robert H. Rose read a paper before the Philadelphia Agricultural Society respecting the cost of keeping them, from which it appears that 1,000 head could be maintained for $800, and that it would require six years to convert a flock of common sheep into Merinos. It was by conversion that many flocks were formed. Rams and ewes of full blood were held at too extravagant prices for farmers to purchase

them, and recourse was had to select common sheep and the hire of or partnership in a full-blooded ram. Of this crossing on the common sheep and the economic value of the Spanish Merino at this early day, an extract from the Memoirs of the Philadelphia Society for promoting Agriculture, for 1815, is given:

> The fortunate introduction of the Spanish, English, and Barbary sheep, all of which are now spreading through the Middle States, may be considered as important acquisitions to the agricultural interests. With regard to the Spanish sheep, it is found by years of experience that the cross with American ewes produces a healthy, hardy, gentle race, which fatten more speedily than the pure American blood; do not lose their wool when shearing has been neglected beyond the usual time, and do not become diseased when fat. The fine quality of the wool is known to all the world; and what is of great consequence, the weight of fleece of the cross with American ewes is evidently increased when compared with the imported sheep. The same increase takes place in the cross with the English sheep. It may be well to add that the wool of sheep from the Spanish cross exhibits the most evident marks of improvement. This adds another proof to the many which all parts of the world furnish that the prejudice respecting the peculiar nature of the climate of Spain, being exclusively calculated to produce fine wool, is erroneous.

Most of the Merino flocks near Philadelphia were owned in Delaware County, and some of them were very large, many of them as late as 1824 having 1,000 to 3,000 head. One large grower was James McIlvain, who had in 1823 over 1,500 head. Five hundred of these he exhibited at the cattle show of that year, described by a Philadelphia paper as "all in high health, with clean noses, rosy skins, lively eyes, and silk-like fleece."

Among those who shipped Merino sheep from Cadiz, Spain, in 1810 and 1811, was Richard W. Meade, then United States consul at that place. All his shipments are believed to have been Infantados. On August 1, 1812, David Rose, of Delaware County, took on shares 60 ewes, 2 rams, and 8 lambs, the property of Mr. Meade, then in Spain, and agreed to pay $6 per annum for each sheep for five years, whether it lived or died. On August 1, 1817, at the expiration of the contract, Mr. Rose delivered to the agent of Mr. Meade 32 old sheep and 149 young ones, making in all 181, and had for his own share 149, just half the increase; so that the whole flock at the expiration of the five years consisted of 330, almost five times the number he had received. These sheep yielded from 4 to 5 pounds of wool, sometimes more, depending upon the condition in which they were kept. The Merino carcass was generally light, but was easily fattened, and Mr. Rose sold in the Philadelphia market, at a later day, some fatted wethers for $2 per head after being sheared, and the mutton was pronounced excellent.

In 1814 W. J. Miller, of Philadelphia County, took possession of a farm of 194 acres that his predecessor had occupied, as a tenant, as a sheep farm since 1809. Mr. Miller says: "My predecessor commenced, I believe, with 100 to 150 Merinos in 1809," and having assumed his contract in September, 1814, Miller had turned over to him 236 sheep, 9 cows, and 6 horses to keep over winter. It may be remarked just

here that Mr. Miller, making this statement in 1824, nearly fifteen years after the date assigned, quite naturally fell into an error of one year. There were not in 1809 100 or 150 full-blooded Merinos near Philadelphia to start a flock with, and the true date is undoubtedly 1810, when the Spanish importations began to arrive, and among them the sheep of Mr. R. W. Meade, to whom these 236 sheep evidently belonged, as will appear further along by Mr. Miller's memorandum. Mr. Miller kept a strict account of his expenditures for feeding, fencing, care, etc., and also of the shearing and increase of the flock.

Year.	Sheep shorn.	Lambs at shearing.	Total.
1815	160	102	262
1816[1]	225	128	353
1817	132	56	188
1818	177	57	234
1819	200	104	304
1820[2]	265	98	363
1821	256	65	321
1822[3]	284	96	380
1823[4]	292	101	393

[1] In October, 1816, divided the increase with Mr. Meade's agent, being 150 sheep, and kept my own share—150; returned also 48 old ewes.

[2] Placed 70 ewes and 2 rams with S. L. Howell on shares, and sold 40 wethers to B. Loyd.

[3] In October sold and sent to Ohio 55 ewes and rams of my own flock, and 85 from those of Mr. Howell's; also 6 to Virginia.

[4] Sold 30 fat wethers to butcher.

Mr. Miller adds to this a memorandum:

In September, 1814, I paid for half the increase of Mr. Meade's flock, being 83 ewes and rams. Immediately sold off 30 rams, leaving me 53 ewes, 20 of which were lambs; and from this stock and the half increase of Mr. Meade's for two years I have now (1824) a flock of 360 sheep and lambs, after having sold as above stated 216—together 576 sheep. The first five years I kept the farm in my own hands. Since 1820 it has been let on shares, giving half of everything raised, including wool, the increase of sheep my own.*

In May, 1825, there were sold from Mr. Miller's flock in the Philadelphia market 1,173 pounds of wool at 50 cents a pound, which, compared with other wool, was high, being 8 cents above Maryland Merino.

It will be noticed by Mr. Miller's memorandum that the sheep he had on shares were R. W. Meade's, that some of them were bred by Samuel L. Howell, of New Jersey, and that the increase of the flocks in 1822 (146 head) were sent to Ohio and Virginia. The portion of Virginia was evidently that embraced in the Panhandle counties.

In 1823 Mr. Miller imported 2 Saxon rams and placed in his flock, and part of it, at least, was devoted to the increase and dissemination of this family of the Merino. In 1824 he had 80 to 90 lambs from the Saxon rams and Spanish ewes, the males of which he offered to dispose of at moderate prices, with the view of extending the breed.

Samuel D. Ingham, Moses Eastburn, and others, of Bucks County, had Merino flocks as early as 1811, the former keeping his more for

* Memoirs of Pennsylvania Agricultural Society, 1824.

pleasure than profit, he said, competing at many of the fairs and carrying away some of the prizes. In October, 1813, Mr. Ingham had a choice flock, some of the best imported into Philadelphia, 3 rams and 33 ewes of which were then for sale. The Merinos were introduced into Chester County in 1810, and in 1811 there were many flocks, among which were those of John P. Steele, Jesse Evans, and Zeba Vickers.

When beef fell from $10 to $6 per hundred in 1817, Caleb Churchman, of Tinicum, considering it advisable to keep some sheep as an appendage to his occupation as a grazier, commenced with 20 Merinos to form a flock, and continued to purchase fine-wooled sheep and to dispose of the coarse-wooled ones until in 1824, when he had over 1,000. These did not average more than 50 to 60 pounds in weight, those with the finest fleeces being the smallest. He made his selections with regard to the quality of the wool, and found that the short-bodied small sheep were the most hardy and possessed not only the finest but the heaviest fleeces. The fleece averaged about 7 pounds of unwashed wool.

Many Merino flocks were kept up for many years near Philadelphia after they had ceased to be profitable. After 1815 the common and mixed breeds of sheep were the most profitable to the grower, and Leicester and other coarse-wooled rams were used in some flocks to convert them into coarse-wooled sheep, but fortunately many Merinos were sent to the western part of the State and to Ohio. Writing about 1824 John Hare Powell, of Philadelphia, said:

> I have always considered that the introduction of Merinos was fortunate merely as it gave the means of crossing various breeds of our native and imported sheep, not in affording the material for clothes fitted but for the rich, and crooked ill-flavored little carcasses, disdained even by the poor. The average weight of the fleeces produced by the best Merino flocks, when made perfectly clean, seldom exceed 2½ pounds per head, which at 50 cents per pound, would equal but $1.25 each. The weight of its carcass may fairly be stated at from 35 to 40 pounds. The bad quality of the mutton, or its ill appearance upon the stall, or possibly some prejudice existing against it in this country as in Spain, whence the animal was brought, makes it less valuable for the shambles than the most common sheep bred upon the worst-managed farms. If the market afford a test by which its value can be shown it may be stated that no mutton is so little sought.

Mr. Powell had just begun the importation of English sheep, and it was natural that he should set in dark colors the picture of the Merino, then at its lowest estimation in the country. It was speedily superseded by the improved English mutton breeds, and by 1840 was almost unknown and forgotten on the farms where it formerly grazed to the great delight and satisfaction of the owners. Their course ran as in New Jersey and eastern and southern New York. Many flocks found homes in the expanding West, a few were neglected, but the greater number were crossed by the Leicester and Southdown, and later by the Cotswold. Wool-growing in the eastern part of the State was gradually abandoned, and at the Pennsylvania State Fair, in 1852, not a Spanish or Saxon Merino could be found on the ground from the coun-

try east of the Alleghanies. In 1853 and 1854 it was the same, but in 1855 Aaron Clement, of Philadelphia County, obtained a premium for a Spanish Merino ram. The fine display of Southdowns, Leicesters, Cotswolds, New Oxfordshires, and mixed breeds, showed the great change that had come over sheep husbandry. Where the growing of wool was formerly lucrative it was now abandoned. The time when it was profitable to raise sheep for the wool interest alone had gone by. It was found necessary to combine the carcass with the fleece, to have an eye to the value of the flesh as an article of food as well as to the wool for clothing. The farmers adopted the system initiated so successfully by their New Jersey neighbors, of purchasing strong, healthy, common ewes or Merino grades, in the fall, breeding them early to Southdowns or long-wooled mutton rams, and selling the spring lambs and such of the ewes as reached a marketable condition in the following season in the Philadelphia and other large markets. A Southdown or Cotswold ram to a grade Merino or common ewe gave a lamb which, dropped in April or early in May, sold in July or August for $4 to $6, and the mother soon followed at nearly the same price. Wethers were also bought out of droves and fattened for market at considerable profit.

Taking the State as a whole, there was small variation in the number of sheep from 1840 to 1880. In 1840 it was 1,767,620, in 1880 it was 1,776,593, and the variation in the intermediate census did not exceed 150,000. But there was a shifting of location. The decline in eastern Pennsylvania was very great, while the increase in western Pennsylvania was very large, the loss in one section being offset by the gain in the other. And there was a change in the character of the sheep. Eastern Pennsylvania rapidly changed the Merino for the mutton breeds, while in the West the Merino received the principal share of attention. Since 1880 the decline in the whole State has been very marked, the number of sheep falling off from 1,776,598 in 1880 to 945,002 in 1890. The decline began in 1885, and may be followed by the inspection of the following returns as given by the Statistician of the Department of Agriculture:

	Sheep.
1884	1,749,236
1885	1,486,857
1886	1,189,481
1887	1,094,323
1888	984,891
1889	935,640
1890	945,002

The causes assigned were the low prices of wool and mutton. The decline was general throughout the State, and it was said that so generally had the sheep disappeared that it was rarely a sheep was seen except on a freight car from the West. Whole flocks were sold between 1884 and 1887 at a very low price, but prices advanced in the latter year and many who had sold out stocked up again; but the tendency was

towards mutton sheep to the neglect of the Merinos. The eastern part of the State was almost stripped of sheep and what it retained were of the mutton variety. Of these breeds this section has some of the best flocks, handled by some of the most intelligent breeders of the country. There are Southdowns, Hampshires, Shropshires, Oxfords, Lincolns, Leicesters, Cotswolds, Dorsets, and Cheviots, and all do well. There are light pastures and heavy pastures, hills, mountains, dales and valleys, and streams of pure water. There are localities and surroundings for every valuable breed, and these are becoming better known. It is no longer possible to see the Lincoln and the Leicester feeding on the mountain, while the Merino and the Southdown were confined to the rich valleys. There is a better understanding of the wants of the various breeds, and more skill in managing them. Near the cities early lambs are the most profitable to grow, and within ten hours' ride of the large markets lambs and fat mutton monopolize the attention of the sheep-raiser. The vast ranges of the West ship away their oldest ewes, which find their way east. These ewes, with proper care, are well able to rear another lamb or two each in the smaller and better-kept flocks of Pennsylvania. They are purchased cheap and put upon the farm, the purchaser getting clear bone and muscle, upon which he evolves a large profit within eight or nine months. If there be a dash of Cotswold or Down blood in his purchase it is preferable. These ewes are put to a Southdown, a Hampshire, or a Cotswold ram, preferably to the two former, as the Cotswold imparts too much bone to his progeny; besides which the grade lambs from the Down cross are more precocious and are fit for the butcher younger, especially Hampshires.

It is this system of handling sheep that supports the fine breeding flocks in the eastern part of the State, rams being drawn from them to cross on the ewes used for breeding the lambs. The business is not so remunerative now as in former years, for there is more competition for the Philadelphia markets than formerly from lambs raised in Maryland, Virginia, and West Virginia. Recent importations of the prolific Dorset Horn sheep have added new interest to this branch of industry. These sheep were introduced into the State in 1887 by M. M. Small, of Cooperstown, and S. B. Griffin, of Canton. On September 13, 1889, T. S. Cooper, of Coopersburg, made an importation of 153 head, mostly from the flock of Henry Mayo, and again on September 18, 1891, an importation of 204 head from the flocks of several well-known English breeders. On the voyage 7 ewes dropped 14 lambs. Among Mr. Cooper's first importation were 3 first-prize yearling ewes at the Royal show in England, July, 1889, that weighed at time of shearing 262, 245, and 222 pounds, respectively, and in August each dropped twin lambs. Four of these lambs, when 4 months old, after the rough experience of a sea voyage, weighed 452 pounds. A prize two-year old ram of this importation weighed 317 pounds, and a prize shearling 287 pounds. First and second prize ram lambs weighed 184 and 164 pounds, respectively, at

5 months 1 week old. In February, 1890, he made the statement that he had 85 imported ewes (mostly yearlings) that were suckling 139 lambs, and among them were lambs 4 weeks old that weighed from 42 to 60 pounds each.

Mr. Small, who bought two ewes and a ram on September 1, 1887, under date of February 15, 1892, gives an interesting statement regarding their fecundity. In October, 1887, each ewe dropped twin lambs, and the following spring twins again. One of the ewes was very old and did not breed regularly, and finally died a year or so later, giving birth to twin lambs. The other ewe after producing the two pairs of twins spoken of dropped five sets of triplets, the last set in December, 1891. This makes in all, for the credit of this one sheep, from September 1, 1887, to December, 1891, 19 lambs. In July, 1891, Mr. Small put this old ewe and five of her daughters with a fresh ram, and the result was 13 lambs in December for the 6 ewes, the old ewe and her oldest daughter each triplets, three of them twins each, and one a single lamb. All the lambs were seemingly sound and all right every way when dropped, and the triplets from the old ewe weighed 31¼ pounds the day they were dropped.

Sheep and wool in Pennsylvania, 1840 to 1890.

Year.	Number of sheep.	Wool.	Wool per head.
		Pounds.	*Pounds.*
1840	1,767,620	3,048,564	1.73
1850	1,822,357	4,481,570	2.43
1860	1,631,540	4,752,522	2.91
1870	1,794,301	6,561,722	3.65
1880	1,776,598	8,470,273	4.77
1890	945,002	4,800,610	5.08

Since the early part of 1890 and to the present day there has been an increasing interest in sheep husbandry, owing to the belief that the day of cheap raising on the public lands of the West is about over, and that sheep will again be a profitable stock. This feeling is especially pronounced in the western part of the State. This section has a system of sheep husbandry peculiarly its own, and will be considered later on.

DELAWARE.

Merino sheep were introduced into Delaware about 1803, by E. I. Dupont, the foundation of his flock being descendants of Don Pedro and Livingston ewes. In 1805 Don Pedro was taken to Delaware, and Mr. Dupont increased his flock to such an extent that in 1810 it was probably the largest single flock in the United States, from which went many sheep to found or improve the other flocks in Delaware, Maryland, and Virginia. The legislature encouraged fine-wooled sheep husbandry, and so popular did it become that in 1814 there were many thousand full and mixed bloods in the State, principally in the vicinity

of Wilmington, where their growth was greatly encouraged by the creation of Dupont's woolen factory. A celebrated flock in its day was that of John Warner, of Wilmington. He began with some of the Don Pedro stock, to which were added purchases from the best of the Jarvis importations into Philadelphia and Baltimore, Mr. Warner making selection of the best offered. The flock was disposed of in 1814, soon after the death of Mr. Warner, and was bought mostly by breeders of the vicinity.

The Merino flocks were well sustained in the State until the failure of woolen manufactures in 1815, when they underwent the same transformation as in eastern Pennsylvania and New Jersey. First they were crossed by the Leicester and Southdowns, then by the Cotswolds or New Oxfordshire, until there was not remaining a pure-blood or high-grade Merino in the State. From 1842 to 1850 the Leicesters and Cotswolds were the fashionable sheep, and the cross of the Cotswold ram on the low-grade Merinos and common ewes was a favorite for the Philadelphia, Wilmington, and Baltimore markets. In 1842 Philip Reybold, of Delaware City, had a flock of over 600 head of Leicester sheep said to be pure-bloods. He slaughtered and sold for the Philadelphia market in that year a two-year-old wether weighing alive 251 pounds. Beside this home flock of 600 he had as many more divided among his different farms. In 1844 100 of his Leicester ewes sheared an average of 7½ pounds of wool per head. In 1846 his son, C. Reybold, visited England, and, with the view of introducing into the country the very best breed of English sheep, selected the improved Cotswold or New Oxfordshire as combining the greater number of good qualities, all things considered. In September, 1847, he sold some of these imported rams for $40 to $60 each. In February, 1848, he imported 2 rams from the flock of Charles Large, of Broadwell, Oxfordshire, weighing 344 and 288 pounds. These sheep became very popular in Delaware and Maryland. At the Maryland State Agricultural Show in 1850 they were considered the finest mutton sheep exhibited and not to be excelled in the country. One fat wether slaughtered during the fair weighed 206 pounds closely dressed, and won $100, a standing offer of ten years from a Mr. Turner, of Baltimore, for the first sheep that would dress 50 pounds the quarter.

The Oxfordshire Down is a comparatively new breed of sheep, and originated in 1833 in the desire to construct a breed that should in great measure possess the weight of the long-wooled with the quality of the Down. The leader in this movement was Mr. Samuel Druce, of Eynsham, Oxford, and he had as colaborers Mr. Gillett, of Southleigh, Mr. Twynham, of Hampshire, and Mr. Blake, of Stanton Harcourt. The foundation of the breed was a neat, improved Cotswold ram and Hampshire Down ewes; and by careful, skillful breeding a cross-bred sheep was produced of great value and deserved popularity. As a number of breeders were engaged in the attempt there was always an opportunity of getting fresh blood by selecting sheep which suited different flocks,

thereby maintaining the uniform character which came to be established. Some of the breeders used a Cotswold ram with the Southdown ewe, whence, with a mixture of blood of the various flocks, the blood of the improved Southdown was infused in the cross. For many years after the breed had become recognized as distinct the want of uniform character was a source of criticism, which was met by Mr. Druce with the assertion that he found no difficulty to keep the form and size of the animal as it should be, the wool of a valuable quality and not deficient in quantity; and he maintained that the good qualities could be better secured by employing the cross-bred animals on both sides than by using the first cross. A comparison was instituted with other sheep with this showing as to proceeds of fleece, carcass, single teg, and flock:

Breed.	Fleece.	Carcass.	Single teg.	Flock.
	s. d.	*s. d.*	*s. d.*	*£ s. d.*
Cotswold	11 4	38 4	49 8	248 6 8
Leicester	9 10	32 7	42 5	222 12 9
Southdown	6 11¼	33 9	40 8¾	204 2 6
Hampshire Down	9 0	36 10	45 10	263 10 10
Cross-breed	9 11¼	41 2	51 1¼	292 18 0

This showing in favor of the cross-breeds was certainly very great, arising of course from the superior quality and therefore higher prices per pound of the mutton as compared with the short-wooled sheep. The question, argued Mr. Druce and his supporters, was not whether any of the long-wools or the short-wools, such as the Cotswold, the Leicester, the Hampshire, or Sussex Down, should be given up, but whether there was room for another; whether in fact it did not require in addition a middle-wool breed beside them. But the evident disadvantage of the system of using only a first cross was this, that as most breeders did not breed their own ewes they must be purchased every year, therefore there was no sure dependence upon keeping up a superior breeding stock.

The difficulty of establishing a new breed, as is well known, consists in the tendency of the cross for many generations to revert to one or other of the original races. Still, many farmers have now (1853) for some years bred this sheep, intermediate between the long-wool and the Down, and have thereby laid a foundation on which, if it be thought fit, others may build.*

The success of the early promoters of this breed brought many others into the field, and whereas till within a short period the Hampshire Down was the principal sheep kept south of the Cotswold district of Oxfordshire, the glory of the county soon became the cross-breeds, the improved Cotswold, the most profitable to the butcher, the producer, and the consumer, and after a period of twenty years without infusion of any fresh blood became a distinct breed of sheep, quite as distinct and pure as the Shropshire, and brought to the same uniformity. They

*Journal of the Royal Agricultural Society of England, Vol. xiv.

so much resembled the Shropshire as to be taken as the same kind of sheep. The superiority claimed for them was that they combined the early maturity, heavy carcass, and ample fleece of the Cotswold, with the fine wool and mutton of the Downs.

At first there was much difficulty in keeping a newly-formed flock of these cross-breeds to one character. The first cross and their produce would be dissimilar; some would partake too much of the long-wool, while others were too small and short-coated. The owner formerly divided his flock into three parts, putting a half-bred ram to the ewes that were about right—a Cotswold to the small ones and a Down to the coarser sheep. By constant attention to these points a flock may be brought to some degree of uniformity; but the breeder frequently found that if the fleece was a little too short or face too white, by using pure Cotswold or Down rams he rushed into the other extreme, the product too much resembling their sires.*

These cross-breeds are considered as profitable as any that can be raised, both on account of size, weight of wool, aptitude to fatten, hardy character, and valuable meat. Not until 1850 were they known as anything but cross-breeds (Down-Cotswolds,) under which designation they achieved some success and reputation at the Smithfield shows. In 1850, from the county of their origin and stronghold, they were styled the Oxfordshire Down. A writer in the Journal of the Royal Agricultural Society of England, 1852, said: "On the Oxfordshire side of Northampton County the Leicester flocks have been crossed to some extent with the New Oxfords. These are sheep of large dimensions, and are bred in Oxfordshire and the surrounding districts. A cross of this kind increases the weight and size of the Leicester." From 1850 to 1860 the breed was much extended by sale from different flocks, but more largely by the sale under the hammer of some choice flocks owned by ram breeders of skill, standing high in the estimation of the public. The distribution of these flocks laid a good foundation for many others, and many tenant farmers gave up the old breeds to make room for the improved one, and landed proprietors became interested in and favored it.

As soon as the breed became established some of the most successful breeders began to exhibit their sheep at the show of the Royal Agricultural Society, and as they had no special class their animals were shown with short-wooled sheep and cross-breds. At a meeting at Warwick, in 1859, there were thirty-seven entries. The first prize in the old class (comprising Oxfords, Shropshires, and Hampshire Downs) was taken by Mr. Samuel Druce for a sheep of this breed. The three prize animals were measured with this result: Mr. Druce's Oxfordshire Down 2 years and 5 months old, girth 4 feet 10 inches; Mr. Humphrey's Hampshire Down, 3 years and 4 months old, girth 4 feet 9 inches; Mr. Adney's Shropshire Down, 2 years and 3½ months old, girth 4 feet 8 inches.

* Farming of Oxfordshire. By Clare Sewell Read, J. R. A. S. of England, Vol. xv, 1855.

At the Leeds show of 1861 there was a large showing of shearling rams, the greater portion of which were Oxfordshires, which were excluded from competition, as they were not considered as coming within the category of short-wooled sheep. The stewards in their report stated:

> At the same time the judges are of opinion that the Oxfordshire Downs should *not* be excluded from competition at these annual shows, as they believe them to be animals possessing great merit, and worthy of having a class to themselves.

The society accorded the breed a separate class, and the Oxfordshire Downs made their first appearance as a recognized breed by the great society in the year 1862, at Battersea, where they numbered sixty-two entries, and were highly spoken of by the judges, who, however, objected to their want of uniformity. The same objection was made at the Newcastle show in 1864, when the judges said they "still exhibit a considerable diversity of color in their legs and faces, but the tendency seems as much as possible toward the dark faces and to the retention of the Cotswold topknot; some were a little too high on the leg." Similar traces of a departure from uniformity were remarked upon by the judges at the annual shows in 1865 and 1868.

From this time a greater fixedness of type was secured, and the reports of the judges and stewards of the annual shows in 1870 and 1872 give high praise for the general excellence and great improvement in uniform character. There was still to be seen, however, a difference in type in the rams offered to the public; but, knowing that a heavy fleece could be obtained with wool thickly set on the skin, and holding the opinion that a fine quality of mutton was not to be found under an open coat, judges thought a great advance would be made, and they have not been disappointed. For rent-payers in England the Oxfordshires are thought not to be excelled, and with their robust constitutions and early maturity, bearing as they do such an abundant supply of mutton and wool, they have made their way into most counties, and many hundreds of rams are yearly sold by the different breeders.

The Oxfordshire is a well formed, round bodied, short legged, mutton and wool combined sheep. It about equals the Hampshire in size, an average weight for mature breeding rams being between 200 and 225 pounds, while 2-year old fat wethers are frequently found weighing upwards of 275 to 300 pounds. The following figures, taken from the Smithfield Club show catalogue, and given by Coleman in his "Sheep of Great Britain," will give some idea of the live weight of a pen of three shearlings when about 22 months old:

	Weight.			Year.
	Cwt.	*qrs.*	*lbs.*	
Shearling wethers	7	3	27	1870
Shearling wethers	7	1	20	1871
Ewes	8	1	26	1870
Ewes	7	3	9	1871

The average age of the pen of three ewes in 1870 was 57½ months; that of three ewes in 1871 was 61 months.

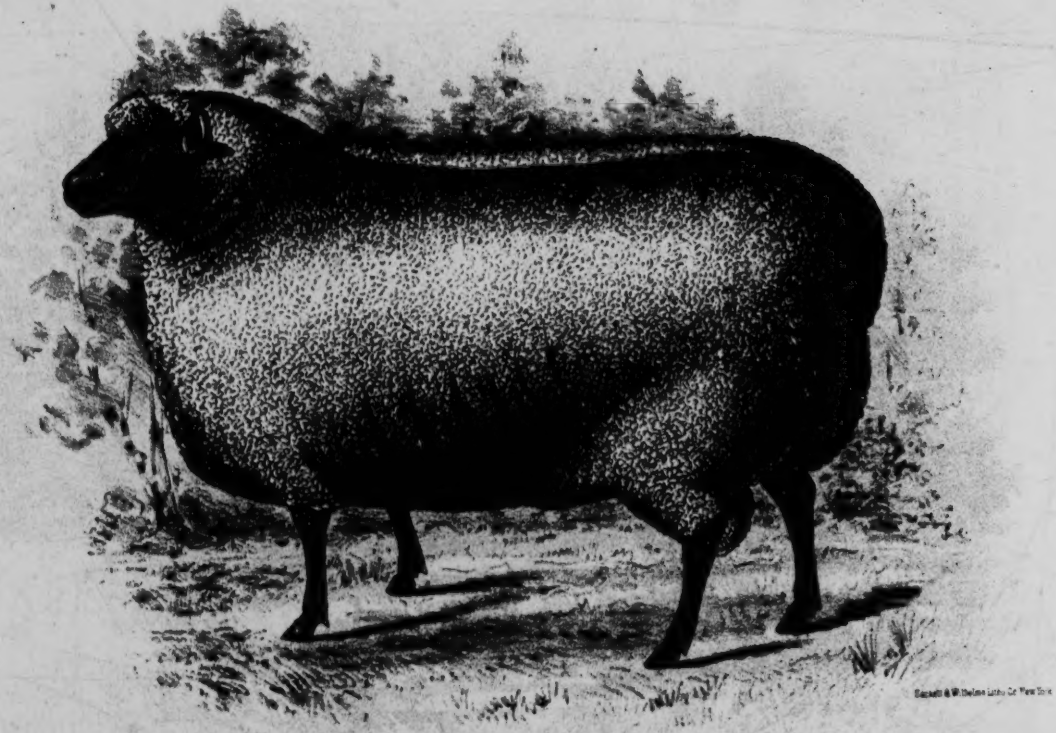
The weight of wool for a whole flock will average about 7 pounds per sheep; rams have been known to cut as much as 20 pounds when shearlings. The Oxfordshire sheep seem to be particularly adapted for mixed soils and bear close confinement. They are a healthy class of sheep, and their management closely approaches that practiced in Hampshire and Wiltshire, where the attention to ewes and lambs has become proverbial—early maturity (*i. e.*, 20 pounds a quarter at a year old) requiring great attention during the young stage.

The stock ewes are generally divided in August, and rams selected to suit each lot; they run over the stubbles and are penned on rape or cabbage at night. They then clean up the pastures till Christmas, having bean or pea straw at night. It is considered unwise to give them many turnips before yeaning. They are then brought into the fold-yard for lambing, and are fed on hay, cotton cake, and a few roots, and remain so till the lambs are sufficiently strong to go into the turnip field. They will be found very good mothers, being strong and prolific, producing a considerable proportion of twins. This, however, depends much upon the nature of the land. The lambs when taken in the field have a fold in front of their mothers, where they are supplied with hay, corn, and, as the case may be, cut swedes, or crop off the greens; the ewes with twins are also given corn. The lambs are usually weaned when about 22 weeks old. The plan most recently adopted is to have the fold thoroughly well set, and allow them to remain in front of the ewes. After a few days they will become quite reconciled.*

The characteristics of a good type of Oxfordshire Downs are: A nice dark drab color of the face and legs; the head medium large, and well covered with wool with a tuft or topknot on the forehead, the tuft not so long as that of the Cotswold, but standing out more from the head; the forehead broad and full; ears set low and well back; eyes large, and muzzle finely pointed. The fleece of wool is thick on the skin but not so long as that of the Cotswold, being about 5 to 7 inches; finer than that of the Cotswold, curly, and standing well out from the body.

One of the finest specimens of this breed was the ram Freeland, bred by Mr. A. F. M. Druce in 1874. He took all the chief prizes wherever shown in 1875, and was afterwards let for the season. In 1876 he was let to T. S. Cooper, of Coopersburg, Pa., for $425. He weighed 425 pounds when exhibited at Philadelphia at the International Exhibition of 1876, where he gained the honor against all breeds, and received the commendation of the judges "for excellence in quality, uniformity of symmetry, great constitutional development, and for being a very superior specimen of the breed to which it belongs."

*Oxfordshire Down Sheep. By A. F. M. Druce and C. Hobbs.



AFTER CURTIS.

OXFORDDOWN RAM, "FREELAND."

Time adds to the popularity of these sheep, and they are now widely distributed. Careful breeding has given them more uniformity of character, and as producers of good quality and heavy weight of mutton and wool at an early age it is difficult to equal them. They have found their way into nearly every part of the world, in every state or kingdom of Europe, into South Africa, Australia, South America, Canada, and the United States.

As has been stated, the New Oxford sheep or Cotswold cross-bred, then called, was introduced into the United States in 1846 by Clayton Reybold, of Delaware, and at his annual shearing at Delaware City, Del., May, 1846, two animals were shown:

Number 1 was 3 feet across the back; 5 feet from nose to rump; 7 feet 4 inches in circumference; weighed 320 pounds (live weight), and gave 13 pounds well washed wool.

Number 2 was 2 feet 2 inches across the back; 5 feet 2 inches from nose to rump; 7 feet in circumference; weighed 272 pounds (live weight), and gave 17 pounds well washed wool.

A 2-year old Oxfordshire sheep was sold in Maryland in 1848 for $80, which was considered a very low price. We are told that the first importations of the new sheep were not appreciated. In 1853 William C. Rives, then in England, sent home to Virginia one ram and five ewes of the breed, which were the first taken into Virginia. About the same time R. S. Fay introduced them into Massachusetts, from the same flock from which Mr. Rives made his purchase. They are now well known and numerous in the United States. The American Oxford Down Record Association has adopted the following scale of points:

Parts.	Points.	Parts.	Points.
Head	8	Fore flank	5
Face	4	Back and loin	12
Nostrils	4	Belly	3
Eyes	2	Quarters	8
Ears	4	Hock	2
Collar	6	Twist or junction	6
Shoulder	8	Fleece	17
Fore legs	4		
Breast	10	Perfection	100

In 1853, Mr. C. Reybold was, perhaps, the largest sheep raiser in the State, at which time he made a statement that he imported regularly, every two years, 2 rams and 6 or more ewes of the New Oxfordshire sheep, and that he then had some 80 very superior full-blood ewes. He found universally that a cross with the common western sheep, which were generally one-half or one-fourth blood Merinos, would add 100 per cent both to wool and carcass, and the wool commanded about the same price as half-blood Merino wool. His imported Oxfordshires, or rather the progeny, gave for rams and wethers 15 to 18 pounds of wool, and for ewes 10 to 12 pounds, well washed. Full-blood rams sold for $50 to $100 and ewes $25 to $40. Thousands of common and grade Merino

sheep were brought from the West, crossed with the improved mutton breeds, and the lambs sent to market, soon to be followed by the fattened ewes and wethers. Raising lambs for market and fattening mutton has been the principal business of the Delaware sheep husbandman since 1850, and in which he has been reasonably successful.

In a paper read before a convention of agriculturists, at Washington, D. C., January 27, 1883, Prof. Wesley Webb, of Delaware College, stated that in 1878 Delaware had 35,000 sheep, which yielded 3 $\frac{9}{10}$ pounds of wool per head, or 136,500 pounds. This wool sold for 28 cents per pound, amounting to $38,129. These 35,000 sheep raised 26,250 lambs, worth probably $3.50 each, or $91,875. Thus the annual income was in round numbers $130,000. Here, as everywhere else, we find a wide range of practice in management, and a broad difference in the income of different flocks. If all flocks were bred up to a good standard and properly fed they might yield 210,000 pounds of wool, or 6 pounds per head, and raise 31,500 lambs worth $6 per head, making an annual income of $247,800—an increase of $117,800 or 90 per cent. The natural conditions are favorable to this great improvement in Delaware sheep husbandry. A climate exempt from the rigors of northern winters and the excessive heats of southern summers, with a fertile soil, rolling and well drained surface, good water and salubrious atmosphere could keep successfully the best and most productive breeds of sheep, and being near large cities and busy woolen mills exceptional facilities are possessed for marketing the produce of the flocks. With all these favoring circumstances Delaware does not need to keep a small, unproductive, unthrifty variety of sheep. Her low fertile lands are capable of carrying the largest and best mutton breeds. But on much of the land of the State such large long-wooled sheep as the Leicesters and Cotswolds need some extra feed. So that for the majority of farms the Oxfordshire, the Hampshire and the Shropshire Downs are better adapted. Either breed thrives and yields the required amount of wool. There is much land in Delaware capable of improvement and which the sheep only can improve, but the animal is not utilized for that purpose. Like all the older States of the Union, Delaware is losing in the number of her sheep, though not as rapidly as some. The number of sheep and pounds of wool from 1840 to 1890 are here given:

Year.	Number of sheep.	Wool.	Average weight of fleece per head.
		Pounds.	*Pounds.*
1840	39,247	64,404	1.64
1850	27,503	57,768	2.10
1860	18,857	50,201	2.65
1870	22,714	58,316	2.52
1880	21,967	97,946	4.46
1890	22,294	112,873	5.06

While these figures show a loss as compared with 1840, they show a remarkable steadiness from 1870 to 1890. The low price of wool from 1884 to 1887 did not materially affect sheep-husbandry, for the sheep breeders of Delaware were exempt from the periodical fluctuations of the wool market caused principally by the necessities of political parties. The industry of the State rests entirely on a mutton foundation, and that upon the appreciation of the people for a good article of food. This stimulates improvement, and so while the flocks have not increased in number or in size they have greatly improved in quality. The best strains of the best breeds are sought after and the steady market encourages close culling and good care of the flock. The flocks kept for home purposes and to supply local markets are not large, consequently can be carefully gone over. In these flocks, generally, a ewe is never kept longer than her fourth year. The practice is much the same as that followed in New Jersey; one-third the ewes are disposed of yearly with the lambs, and the best ewe lambs reserved to fill up their places and maintain the flock at the same number. This selection makes improvement.

MARYLAND AND THE DISTRICT OF COLUMBIA.

Some of the earliest and most enthusiastic breeders of Merino sheep were of the District of Columbia and the country adjacent thereto. Prominent among these was Gen. John Mason, who owned the fine estate of Analostan Island in the Potomac, opposite Georgetown, D. C. Gen. Mason was commandant of the District militia, a gentleman of means and culture, and the owner of some fine farms in Maryland and Virginia. He was a purchaser of a Dupont ram as early as 1808, and had a seven-eighth blood Humphrey's ram in 1811. He was a purchaser of a Viadillo ram at the sale in Philadelphia September 5, 1810, of the cargo of the *Unity*, shipped by William Jarvis. In the year 1811 he himself imported Merinos, as we have seen, and bought from the importations of others a few selected from each as they were landed, and thus formed a small flock made up of the Paular, Infantado, Guadaloupe, Viadillo, and Montarco sheep, known to be among the best fine-wooled flocks in Spain. This stock he kept for more than twenty years under his own eye, and so preserved a little colony of pure Spanish blood (as his insular situation conveniently enabled him to do), uncontaminated by any other mixture. He sent out from it to his other farms the stock rams, and drafted from it every year for crossing at these any excesses of the number limited by the means of his small farm, retaining always for the breeding stock the individuals found to have the finest and closest wool. As long as the imported sheep lived he was in the habit of so marking their immediate descendants as that the intermixture of the Spanish flocks mentioned could be at once ascertained in each case.

There are some records of Mason's sheep, as well as those of his neighbors, which can be given.

At a fair of the Columbian Agricultural Society of Georgetown, held May 5, 1811, five candidates entered for the premium for fine-wooled sheep.

	Gross weight.	Fleece.
	Pounds.	*Pounds.*
Gen. John Mason's Potomac Chief	103½	6½
Thomas Peter's Montgomery	84½	3½
Basil Darby's Jack	131½	9½
R. Brook's Hopewell	93½	4½
Mr. Chichester's	94½	5½

These were all of the Merino breed, and the weight of fleece is given as unwashed. The premium for the best was awarded to Gen. Mason's "Potomac Chief," of Humphreys breed, and the second premium to R. Brook's "Hopewell," a half-blood Merino ram of the Dupont breed.

On May 22, 1812, at the fifth semi-annual fair of the Columbian Agricultural Society, held at Georgetown, D. C., a premium of $60 for the best two-toothed ram lamb of the fine-wooled breed was awarded to Gen. John Mason, of Analostan Island, for his full-blooded Merino ram Golden Fleece, of imported father and mother, from the Spanish flock of the Duke of Infantado, and $40 for the second best to Edward Lloyd, of Wye, Talbot County, late governor of Maryland, for his full-blooded Merino ram lamb Talbot, of imported father and mother, from the Paular flock. Golden Fleece weighed 93 pounds 6 ounces; his fleece weighed 10 pounds 6 ounces; total, 103 pounds 12 ounces. Talbot weighed 123 pounds 6 ounces; his fleece weighed 13 pounds 10 ounces; total, 137 pounds.

Other sheep exhibited showed that the Merino exceeded the long-wooled breed not only in quality of wool but in quantity, and on an average were little inferior in weight of carcass. It was manifest to every one that Merino sheep could be brought to as great perfection in States adjacent to the Potomac as in any country in the world where an attempt had been made to raise or breed them. The full-blooded Merino sheep, and those of the higher crosses exhibited for premium and shown as specimens yeaned and raised in the country, were decidedly preferable to those imported from Spain, or any other part of Europe, in almost every essential or desirably quality—in size, in beauty, and quantity of fleece, and not inferior in fineness of wool.

In 1813 John Threlkeld, who, with Gen. Mason, bought an Escurial ram at the sale of the *Diana* sheep, June, 1810, and who had Merinos also of the Dupont and Humphreys blood, sheared 60 pounds of wool from 4 rams and 2 ewes, and in 1814 he cut 78 pounds 8 ounces from 2 rams and 6 ewes. In the latter year Gen. Mason sheared 55 pounds 12

ounces from 6 ewes. The lightest fleece of these 20 sheep weighed 7 pounds 8 ounces; the heaviest, 15 pounds 3 ounces; total, 194 pounds 4 ounces; average for each, 9 pounds 10 ounces. The wool sold for $1.75 per pound. The following table, made by Gen. Mason in 1812 or 1813, gives some interesting details of his sheep:

A comparison of the weight in carcass and wool of different breeds of imported Merino sheep fed on Analostan Island.

Variety of sheep.	Weight of carcass.	Weight of wool.	Proportion of wool to carcass.	Average.
	Lb. *Oz.*	*Lb.* *Oz.*	*Pounds.*	*Pounds.*
Infantado ram	82 8	8 8	1 to 9¼	
Do	73 0	7 0	1 10¼	
2 Infantado rams	155 8	15 8	2 20	1 to 10
Paular ram	100 12	7 5	1 13¾	
Do	90 2	5 14	1 15½	
2 Paular rams	190 14	13 2	2 29½	1 14¾
1 Viadillo ram	85 0	9 0	1 9½	1 9½
Infantado ewe	62 8	6 8	1 9½	
Do	53 4	6 12	1 8¼	
Do	57 6	6 8	1 9	
Do	50 3	5 13	1 8¾	
4 Infantado ewes	223 5	25 9	4 35¼	1 8¾
Paular ewe	56 2	4 14	1 11½	
Do	63 6	4 10	1 14	
Do	65 6	4 10	1 14	
3 Paular ewes	184 14	14 2	3 39¾	1 13
Guadaloupe ewe	54 2	5 14	1 9¾	
Do	54 12	5 4	1 10¼	
Do	48 9	5 7	1 8¾	
3 Guadaloupe ewes	157 7	16 9	3 28¾	1 9¼

Result.

5 rams	431 6	37 10	5 58¾	1 11¾
10 ewes	565 10	56 4	10 101¼	1 10¼
General average	997 0	93 14	15 160¼	1 10½

The fleece of each sheep weighed upon an average 6 pounds, $4\frac{2}{15}$ ounces, and the average weight of carcass of the 15 rams and ewes was $66\frac{7}{15}$ pounds.

There were many others in Washington and vicinity who bred Merino sheep, but not to such extent and with such care as did Gen. Mason; and his flock can be taken as the typical one of what could be realized in the fine-wooled sheep industry on the Potomac. R. K. Meade, whose successful efforts with the Frederick sheep has been noted, says that of the Merino sheep of the District of Columbia in 1810 and 1811 the smallest and most indifferent had the most remarkably fine wool.

Edward Lloyd, of Wye, Talbot county, Md., was a farmer delighting in fine sheep of all kinds, of which he had many. He was enthusiastic in his advocacy of home manufacture, and in his address to the legislature of the State, on assuming the office of governor, in November, 1810, appeared in a suit of homespun made from wool taken from his own Merino sheep. He was an early advocate and purchaser of the Merino, and from his flock went many rams and ewes into other flocks on the

eastern shore of Maryland. Whether from his flock or another—presumably, however, from Mr. Lloyd's, in May, 1813—two Merino lambs were exhibited at Talbot on court day, the fleeces of which weighed 20½ and 18½ pounds. The lambs weighed 174 and 159 pounds, respectively. The united fleeces sold for $78, or $2 per pound.

There were some fine Merino flocks near Baltimore, but facts concerning them are wanting. On May 26, 1814, a sale of 39 rams and 50 ewes took place on the farm of Samuel G. Jones, 3 miles from the city. The sheep were represented as full-blooded Guadaloupes, Paulars, and Negrettis, principally Paulars imported by R. Barry, and all in high health, beautiful form, and fine fleece. The Paular and Guadaloupe ewes sold for $85 and $100; a ewe and lamb together at $125 to $190, and rams from $50 to $100.

Western Maryland has been formed by nature for sheep-raising, and was the home of some superior flocks of long-wooled sheep. The Merinos found their way there and were raised in considerable numbers, not, however, so strictly in pure-blood as in crosses with the long-wools.

Some crosses with the Arlington long-wool gave satisfactory results. Washington County was the center of the fine-wooled husbandry and maintained some fine flocks, one of which contained Escurials and Paulars. This was owned by O. A. W. Stull, at Salubria, near Hagerstown, and was offered at public sale September 3, 1814, when over 200 full bloods, including 10 Escurial and 28 Paular rams, and some half bloods, were disposed of at good prices to purchasers from the surrounding country. A woolen factory at Hagerstown did much to encourage full-blood sheep husbandry, and other establishments also aided in that direction. As early as 1811 there were on the upper Potomac, in Washington County alone, fourteen fulling mills which annually passed 17,000 yards of cloth, eleven carding machines which passed 28,000 pounds of wool, and 132,000 yards of cloth were made in private families. Upon the failure of the woolen manufacture in the country, and the subsequent suspension of the woolen mill at Hagerstown and allied mills in various parts of the State, fine-wooled husbandry declined and the course of other States was repeated—whole flocks disposed of to go West to be slaughtered, or were converted into coarse-wooled mutton sheep. The Merinos rapidly disappeared from the State.

In 1853 Mr. H. N. Andrews established a Merino sheep farm in Prince George County, where he had that year about 1,000 Merinos of all grades. He had been engaged some years in driving Merino sheep from Vermont to Virginia, and finding it a profitable business established this sheep farm, not only as an intermediate station and distributing point, but also to breed from. Its existence was not long maintained, but it scattered a few Merino sheep in that section of the State.

The older common breeds and the Merino have given way in turn to the Leicesters, the Southdowns, the New Oxfordshires, and latterly

the Shropshires, which now take the lead. The New Oxfordshires were introduced about 1847 or 1848 from the importations of Mr. Reybold, of Delaware, and spread rapidly, and at about the same time some Lincolnshires made their appearance. In 1850 James N. Goldsborough, of Talbot County, preserved the weights of 4 sheep, which are here given:

Age and sex.	Live weight.	Washed fleece.
	Pounds.	*Pounds.*
Three-year-old Oxfordshire ram	235	7¼
Yearling Lincolnshire ram	171½	8¼
Three-year-old Leicester ewe	212¾	7¼
Three-year-old Leicester ewe	194½	7¾

The date of the Shropshires entrance on Maryland farms is uncertain, but in 1860 Samuel Sutton, near the Relay House, imported 1 ram and 20 ewes, also 1 ram and 6 ewes of the Lincolnshire breed. Since 1885 the Maryland sheep have been greatly improved by the introduction of a number of high-priced Cotswold and Shropshires imported from the best English flocks. These have taken the place in small numbers of a large number of indifferent and common sheep. Washington, Baltimore, and Philadelphia are the markets, and some choice early lambs find a ready sale at good prices in New York. Some Shropshire lambs at 3 months old, weighing 60 to 70 pounds, have sold for 10 to 14 cents per pound live weight. There are times when mutton is a drug in the market and wool sells discouragingly low. Then the intelligent farmer culls his flock and improves it, and when the depression passes away he finds himself the possessor of a better animal, yielding more and better wool and of better flesh. He may not have as many sheep, but he has better ones.

There is no part of Maryland that would not support a prosperous sheep husbandry, and there are parts of the State where its extension would be a blessing. In western Maryland the rich grasses of the hillsides and the valleys grow a superior mutton, and the farmer who adopts the sheep as a factor in mixed husbandry finds his profit in it, not only in the ready cash which comes from the early lamb and the fall mutton, but in the increased fertility of his land. In most of the State, and particularly in the southern portion, sheep require but little shelter during the winter, except that afforded by open sheds. As a matter of fact they get even less than that. Grain is seldom given them. A farmer representing the average treatment in the country lying adjacent to the District of Columbia gave during the winter no grain, no hay, and no shelter, except what his tobacco-houses afforded, and his sheep were fat and healthy, with well-grown fat lambs that brought high prices in the Washington markets. The sheep had the run all the time on timothy pasture and old clover fields, except when the ground was frozen or covered with snow, when they had the choice of corn fodder or straw. They sheared over 6 pounds of wool each. The wool alone more than paid for the cost of keeping.

In the southern counties of the State sheep have not reached a great degree of popularity. The average farmer does not believe in them and contends that they poison the land upon which they feed. Those who rise above this prejudice find the climate and surroundings very favorable to their keeping. Where there is free access to the salt marshes, which abound along all the water courses, they are said to be entirely free from the liver rot, and the salt mud is claimed to prevent the foot rot, which fresh-water mud induces. The pure Southdowns, which find such congenial conditions in western Maryland, do not thrive so well when removed to the lower counties, and some attempts to breed them have not been successful. The best results are produced when Southdowns, Shropshires, and Oxford Downs are bred to native ewes. The produce is a fine mutton sheep with great hardiness. The so-called native or common sheep are the remains of the old Merinos formerly kept for wool. The great drawback to sheep husbandry in this section, next to the prejudice of the people, is the hostility of the dog, and no progress seems possible while the people think that the dog is more valuable than the sheep.

There was a slight decline in interest among the sheep-breeders of the State in 1882 and 1884, but interest revived in the last-named year, when the ravages of the dogs were somewhat abated and the sheep were free from any general epidemic disease. The character of the sheep was very much improved and more attention was given to the selection of stock. In 1885 there was a slight decline in the number of sheep, owing to the low prices of wool and mutton, yet the aggregate value was greater than in the preceding year, because of the number of high-priced imported sheep that had taken the place in small numbers of a large number of more indifferent ones. It did not pay to raise sheep for the butcher, hence few cared to keep more than would be necessary for home consumption. No disease prevailed and the destruction by dogs was less than before, yet both Wicomico and Allegany counties reported the loss by dogs to be not less than 500 each. The Agricultural Department reported a still further decrease in 1886, but there had been large importations of the Downs and the Cotswolds. The mass of country sheep seemed to be disappearing, while a small but far better class were slowly taking their place. Hence, while the State presented a great falling off in numbers, she was slowly enriching herself by the introduction of a superior class of animals.

Sheep and wool in Maryland, 1840 to 1890.

Year.	Sheep.	Wool.	Average weight of fleece per head.
		Pounds.	*Pounds.*
1840	257,922	494,701	1.90
1850	177,902	477,430	2.68
1860	155,765	491,511	3.15
1870	129,697	435,213	3.35
1880	171,103	850,084	4.96
1890	133,789	706,432	5.28

IMPORTED SOUTHDOWN RAM.
TWO YEARS OLD.

VIRGINIA.

At the beginning of this century Virginia possessed some of the best wool-producing sheep of the United States, and there was a growing interest in their further improvement. Some of the early importations of the Merino sheep were secured from the Dupont, Humphreys, and Livingston descent, and Thomas Jefferson, James Madison, Gen. John Mason, Gen. Thompson Mason, and many other prominent and patriotic men, bought of the Jarvis importations and took pride in cultivating and disseminating the sheep. At first the newspapers urged the adoption of the Merino as a basis of manufactures and true independence. The Richmond Inquirer of September 28, 1810, said:

> These will form a real acquisition of riches to this country, more precious than mines of gold and silver, the diamonds of Golconda, or the gems from Samarcand. It is the real Golden Fleece of which the ancients have woven such wonderful tales, and those who bring them into this country may be considered as the real Argonauts of America. Let us cherish these treasures. The legislature should take care to foster them by laws, and the owner to furnish the proper food and preserve the breed from adulteration. (1) The legislature should lay a tax on dogs. This tax, if necessary, to be given as a premium for wolves' scalps. Without such a shield the rearing of sheep must be retarded in Virginia. Few will be willing to invest $400 or $500 in an animal which may be torn from them in a night between the teeth of a dog. (2) A law should be in force a few years exempting them from sheriffs' executions. (3) Owners should take care to keep the blood pure, and to mark the full-blooded rams.

But the popularity of the sheep was limited; it did not obtain a foothold, a fact attributed by many to the writings of one of her purest public men—Col. John Taylor, of Caroline. Col. Taylor was a farmer of more than forty years' experience, had served his State in the Senate of the United States, and was universally beloved as a man of unblemished integrity of character and a pure patriot.

In 1808 and 1809, when Connecticut, New York, New Jersey, Pennsylvania, Ohio, and other States were encouraging home manufactures and the introduction of Merino sheep, when embargoes closed nearly all the ports of the world, and the manufacturing spirit was rapidly rising all over the Union, Col. Taylor published in the columns of a Virginia paper a series of essays, sixty-four in number, which were collected in 1813 and published in one volume, and of which several editions were printed. These essays were upon politics, slavery, labor, live stock, fencing, and other subjects of the farm, and combining his long experience and extensive reading, were valuable, and produced much effect. In the fourth edition Col. Taylor gave the motive which prompted the preparation of the essays, which was "a conviction that the prosperity of our country depended upon a competent share of agricultural and political knowledge, and that an ignorance of either would defeat the benefits naturally flowing from a proficiency in both." These essays were professedly an effort to combine and treat together agriculture and politics, "the primary causes of our wealth and liberty," both con-

taining "internal good principles, but both liable to practical destruction." The keynote of his argument was opposition to banks, manufacturers, and a privileged class of officeholders. "The device of protecting duties, under the pretext of encouraging manufactures, operates, like its kindred, by creating a capitalist interest, which instantly seizes upon the bounty taken by law from agriculture, and instead of doing any good to the actual workers in wool, metal, cotton, or other substances, it helps to rear up an aristocratical order at the expense of workers in earth, to unite with government in oppressing every species of useful industry." Twelve essays were devoted to the political aspects of the subject, in which he attributed the decay of Virginia agriculture and the depopulation of her small towns to the evils of government and the partiality shown banking and manufactures. In his forty-fourth essay he takes up the sheep, and says:

It is with reluctance that I am about to express my opinion as to this stock, lest they may discredit those upon which I have had more experience. For sixteen years I have labored to estimate their value and character, upon a small scale, having a flock only of from one to four hundred, daily attended by a shepherd, and my conclusions are that they require and consume far more food, in proportion to their size, than any other stock; that they are more liable to disease and death, and they can not be made a profitable object, throughout the whole extent of the warm, dry climate and sandy soil of the United States, but by banishing tillage from vast tracts of country. These opinions are by no means intended, however, to exclude them as a luxury for the table, capable of being made to repay a considerable portion of the expense it causes. It is probable that the hot constitution of sheep produces a rapid digestion and that insatiable appetite, by which the fact is accounted for of their flourishing only to any extent in fine meadows or extensive wildernesses. If this voraciousness is not gratified the animal perishes or dwindles; if it is, he depopulates the country he inhabits. The sheep of Spain have probably kept out of existence or sent out of it more people than the wild beasts of the earth have destroyed from the creation, and those of England may have caused a greater depopulation than all her extravagant wars. It may be owing to this animal that the independence of one country is almost overthrown, and of the other tottering. In both countries the sufficiency of bread for sheep may have produced the insufficiency of bread for man, and prejudice may have nurtured errors, of which our folly may relieve them, just as superstition has been known to seize or steal an idol which had long been a curse to the place of its invention. It is admitted that the wool of sheep is to a certain extent a necessary and often a luxury; but if I fancied a pearl, why should I dive for it myself, when those who love the employment wish to supply me; or why should a nation depopulate itself to gain them if it can become strong and populous without pearls? The earth's capacity to produce food and materials for clothes is limited, and by endowing the brute creation with so much of the former as to produce a deficit for man's use in order to obtain a surplus of the latter for exportation, the sheep policy is said to be perfected. It is probable that an acre of the proper soil in the proper climate is capable of raising ten times as much cotton wool as sheep's, and if we shall only glance at the vast quantity of the former material for clothing exported from a small district of country thinly peopled we shall at once see the capacity of the earth to produce it to any needful extent without paying depopulation for raiment. Although sheep's wool was the best resource for a state of ignorance it is superseded to a great extent by a state of cotton manufacturing skill, and whilst the English nation have proved the high value of our cotton and opened an inexhaustible demand for the abundance we can spare, it is certainly a responsi-

ble hostage for the small portion of her woolens we may want, and an exchange is probably better than turning our cornfields into sheep pastures. It is exactly the case in which commerce renders a mutual benefit, as we, under our warm and dry climate and in our sandy soil, can raise cotton cheaper than England; and she by the help of her moisture and verdure can raise wool cheaper than the United States. It is curious that wool should be supplanting cotton here, whilst cotton is supplanting wool in Europe; but as fashions wear out in one country they flee to another.

This essay, following close upon assertions made in preceding ones that agriculture was being "filched" to assist manufactures, had immediate effect, and some papers that had given encouragement to the Merino changed front and insisted that their introduction would exclude all the old sheep, and no wool would be obtainable for coarse woolen cloths; that long wool was wanted as much as fine; some sheep must be raised for mutton, not for wool only, and to the appeal made by some that the Merino should not be crossed, but bred pure, the Alexandria Gazette thought that would be too much of a good thing: "Democrats intermarry with Federal families, and that breed is thus improved without Federal deterioration."

There were others who, friendly to domestic manufactures, were totally opposed to the scheme of fostering and forcing manufactures by heavy duties, giving rise to great manufacturing establishments, supported by wealthy individuals, and tending, as they believed, to destroy the physical, moral, and political character of the laborer. To them the preservation of the Merino blood pure and alone would be at once unwise, impolitic, and in many respects injurious. The country had many useful native breeds which, by crossing with the valued strangers, would imbibe a sufficiency of their superior qualities to answer every necessary and ordinary purpose. At the same time this system would rescue the native sheep from unmerited neglect and disperse the Merino strain through all parts of our country. Again, clothes made of the pure Merino wool were only suited to the uses of the rich and luxurious. Their costly nature precluded their introduction to the humbler walks of life, and although the man of fortune might indulge in the comforts of warm clothing, flannels, and nightcaps, his poorer neighbor would still be shivering in the horrors of nakedness and neglect. If manufactures were wanting, they were especially wanting to the needy and distressed; a blanket was more useful than a shawl, a strong cloth more extensively useful than a fine one. To encourage domestic establishments in parishes and townships and to discourage extensive monopolies should form the essential policy of our country; when it became an exporting community was time enough to fashion our fabrics to the taste of luxury abroad. First minister to the comforts of that large and useful class of the political family who support the cause of industry in peace and protect the cause of freedom in war, who deserve the due attention of science and patriotism to supply their real wants. It was argued that the great preference given to imported sheep discouraged the small farmer from improving his native

breeds. To introduce a proper admixture of the fine with the coarser wooled sheep would tend to equalize the price and bring it more within the compass of farmers in general. It were better to see every farmer's little territory spotted with a few sheep than to see the flocks of a Merino nabob extending far and wide. Beneficent systems of human affairs had their abuses, and from these the Merino system was not exempt.*

There were many, however, who did not agree with Col. Taylor and his followers, many who considered the Merinos and all other sheep as a blessing and not as a curse, as the savior of Virginia agriculture and not its destroyer, and manufactures as the handmaid of agriculture. These argued that all the ordinary stock of wool was consumed in manufactures and all that could be procured by our import trade and by all the foreign breeds of sheep. The great effort of the farmers, north and east, to produce wool did not keep pace with the increasing demand; hence the price of wool kept up, and under these circumstances, when wool was in demand, was it wise, asked some, to keep on raising tobacco to be dutied and plundered, or was it the part of wisdom to decrease tobacco and raise more sheep, produce more and better wool, and provide a market at home, free from injury, insult, and vexation, whereby the industry of the women and children and the power of machinery with a little aid from regular and skillful male manufacturers the people could be truly independent and prosperous?

Notwithstanding Col. Taylor's writings and the prejudice engendered by those who followed him, there were some fine flocks of Merino sheep in the State. Jefferson had made them numerous in his neighborhood and there were many in the upper and eastern part of the State along the borders of the Potomac. Gen. John Mason distributed many from the increase of his flock on Analostan Island. Gen. Thompson Mason had a choice flock of Infantados on his estate adjoining Mount Vernon, and Fairfax, Loudoun, Prince William, Stafford, King George, Fauquier, and Jefferson counties had a few choice flocks. Many of these gradually disappeared, so that by 1820–1825 but few of full blood were remaining. In June, 1823, a gentleman of Fairfax County sheared a flock of 525 mixed Merinos, from which he obtained 2,368½ pounds of wool free from tags, or an average of little more than 4½ pounds per sheep, not as great as in former years, in consequence of the flock containing a larger proportion of breeding ewes than usual. This wool sold in the Alexandria market for 40 cents a pound, which price it held for the four years preceding. In 1825 W. H. Fitzhugh, Ravenswood, near Alexandria, was still maintaining a pure flock, 600 to 700 of which he offered for sale. There were at the time other flocks of which no record has been preserved. Western Virginia, that part of the State lying beyond the mountains, had fine flocks, which will be noted in con-

* The Agricultural Museum, Georgetown, January 23, 1811.

nection with those of western Pennsylvania and Ohio, to which they were allied and from which they originated.

The Saxon Merino made no impression upon the sheep husbandry of eastern Virginia—was hardly known there, in fact, and from 1820 to 1845 fine-wool growing was almost entirely neglected. From 1840 to 1845 the subject attracted more attention than at any previous period not only in Virginia but in other Southern States. There were at that time thousands of acres of land that had been run out by the cultivation of tobacco years in succession, and there were other thousands of mountain lands and unproductive tracts that could not be made to yield any vegetable products but pasturage. Nor was this pasturage of a kind to support large animals; it suggested a small animal, the sheep, and the growing of wool. The sheep answered the requirement of the worn-out lands also, a fact not so apparent to the landowners and planters of Virginia as it was to others who had observed the utility of this animal in converting the useless products of worn-out land into manure for its successful fertilization. Henry S. Randall, of New York, had noticed the peculiar adaptability of some of the Southern lands for growing wool, and in a letter to the Secretary of the Treasury in 1845, and in a series of letters published in the Virginia Valley Farmer the same year, stated some of the general conclusions at which he had arrived. These letters attracted much attention and stimulated inquiry, and, in 1846, John S. Skinner, editor of the Monthly Journal of Agriculture of New York, requested Mr. Randall to prepare a series of letters on sheep husbandry, and especially on sheep husbandry in the South, for the Farmers' Library. Mr. Randall prepared the letters, which were addressed to Col. R. F. W. Allston, of Waccamaco Beach, near Georgetown, S. C., and they were published and had extensive circulation and attentive consideration throughout the South, and more especially in Virginia. He considered the grounds of opposition that had been urged or imagined against sheep husbandry in the South, on the score of climate, deficiency of forage, want of an adequate demand for wool, and other obstacles, and brought together a mass of facts of great value. He discussed the great hilly region lying back of the Atlantic Ocean and extending westward from the Blue Ridge to the borders of the Ohio and southwest from the Pennsylvania line to the borders of North Carolina with the grasses and other natural pasturage conducive to the life and health of sheep, collated the direct profits of raising sheep in less favored localities of the North, argued the great value of the sheep as a renovator of worn-out land, and presented a point of no mean importance, whether, independent of all other considerations, and even if the staples furnished by sheep husbandry proved no more profitable in direct returns on capital invested than some of the present staples, it would not be better economy, on the whole, for the South to produce the raw material and manufacture domestic woolens, particularly for the apparel and

bedding of slaves, than to be dependent for them on England or Massachusetts.

In the tidewater counties Mr. Randall recommended the mutton sheep as best adapted to the system of farming carried on, and as the most profitable, but on poor lands westward and the hilly regions he suggested the Merino, producing wool ranging from good medium upward. As to the question, which variety of the Merino, the Saxon or the Spanish, he entered into an explanation and comparison of their respective merit and adaptability. He knew by experience that once interbreeding between an ewe bearing good, medium wool, the fleece weighing, say, from 4½ to 5 pounds, with a Merino ram of sufficient high quality, would produce wool in the offspring equaling ordinary Saxon, and a fleece averaging 4 pounds, with more of its weight made up of gum. The result of two such interbreedings would bring the progeny of a heavy-fleeced medium ewe, provided the fleece be properly even, to the same point. The 4-pound, fine-fleeced Spanish Merino would be a far more profitable animal than the Saxon, other things being equal. But other things were not equal. The Spanish was in every way a hardier animal and a better nurse. It was about 20 pounds heavier, and therefore consumed more feed, but this additional expense was more than counterbalanced by the additional care and risk attending the husbandry of the Saxon. It was practicable to increase the Saxon's fleece to 4 pounds, but it would be at the expense of its fineness, and there was an additional objection to this system of breeding, so far as the Saxon was concerned. The breeder was not only called upon to increase the weight of its fleece and carcass, but to engraft on it hardiness of constitution, nursing properties, etc., which by no means followed, as a matter of course, its improvement in other particulars. These, and particularly the latter, could only be attained so as to be transmissible with a proper degree of certainty from parents to offspring by years of breeding, accompanied by a vigorous course of selection. He concluded, therefore, that if called upon to form a variety just suited to the wants of the South the Spanish Merino would present the most ductile and the safest materials. But the Southern agriculturist, just entering upon sheep-rearing, would not be prepared to conduct nice experiments in breeding. He wanted a breed, a variety, already prepared to hand, a hardy breed, one that demanded no extra skill, no great experience for its management. Spanish Merinos reaching or closely approaching the standard were to be found, while there were no corresponding varieties of Saxons; and to incur the risks arising from inexperience, want of preparation, and other minor reasons, the superior hardiness of the Spanish Merinos would render them entirely preferable. Some had recommended a cross between the Saxons and Spanish Merinos as a cheap and ready method of obtaining a 4-pound fine-fleeced sheep.

A properly selected Saxon ram, crossed with good medium and medium-wooled Spanish ewes, cutting from 5 to 5½ pounds of wool, would

always uniformly produce this result. And it was easier then to get the Saxon than the Spanish Merino fine enough for the purpose. Or a flock could be bred up from Saxon ewes and a Spanish Merino ram. The objection to both courses was the same, though not equal to that existing against breeding the full-blooded Saxons, viz., the production of a feeble and a poor nursing sheep. The latter evil, especially, clung for generations to these cross-bred animals, and unless Saxons were selected not possessing the characteristic faults of the variety the cross-breds would be found inferior to pure-blood Spanish Merinos in many other and essential particulars, although the fleece might be all that was desired. There was another point where the pure-blood Spanish Merino possessed a marked advantage. Few southern wool-growers would commence their flocks exclusively with high-bred animals of any kind. With a few of them to breed rams from and to gradually grow up a full-blood flock, they would mainly depend upon grading up the common sheep of the country. With the long-legged, bare-bellied, open-wooled sheep, common in the South, as it once was in the North, the Saxon made an indifferent cross. Their faults ran too much in the same direction, in all save the fineness of wool, for, however good its shape, the wool of the Saxon was comparatively short and open. It therefore shortened the wool of the common sheep without adding much or any to its thickness, and thus the fleece remained a light one. Precisely the reverse of all this was the result from a cross between the Spanish Merino and the common sheep. The wool was but little shortened, unless the staple of the common sheep was very long; it was essentially thickened; it extended over the belly; the fleece was greatly increased in weight; the sheep rendered more compact and stocky, and brought nearer the ground. Even the first cross, though the fleece be somewhat uneven, would be found a prime sheep for the wants of ordinary farmers, and among these it was a decided favorite over the whole Northern States, a majority preferring it over any other kind or variety of sheep. Two or three proper Spanish Merino crosses raises it to the rank of a first-rate wool-growing sheep, scarcely inferior to the full-blood Spanish Merino in anything, save that it does not transmit its good qualities with quite so much certainty to its offspring.*

Having thus indicated the proper sheep for wool-growing in the South, Mr. Randall further proceeded to indicate the points of excellence of the Spanish Merino and its grades, the management, washing, shearing, care of wool, diseases to which the sheep were liable and their remedies, in fact everything pertaining to the subject, embracing the best work on American sheep husbandry up to that date.

The effect of the work was immediately perceptible in a revival of wool growing in many sections of the South, particularly in Virginia. The material for forming new flocks was plenty and cheap. From the passage of the tariff of 1846 there had been a panic among the wool-

* "Sheep husbandry in the South." Henry S. Randall.

growers of New York and the Eastern States, and the rise in breadstuffs, beef, pork, and dairy products, occasioned by the change in the British tariff, and the famine which prevailed in Europe by reason of the short crops of 1846, tended farther to depreciate sheep, by offering inducements to embark in branches of husbandry furnishing the former staples. Consequently sheep became cheaper than ever before, prime grade sheep, bearing wool of good quality, selling for $1.25 per head, and coarse common sheep for $1, lambs half a dollar, making in the ordinary proportion between lambs and grown sheep about 75 cents per head, taking a flock through. Advantage was taken of the low price of high-grade sheep in Vermont and elsewhere, where they were being sold off, and many thousands were purchased and taken to the South, some peddlers selling well into the thousands, one dealer alone, from 1847 to 1852 disposing of more than 13,000 in Virginia for wool-growing purposes. In 1848 Samuel F. Christian, near Greenville, Augusta County, had a flock of very superior Merinos. In 1850 Buckingham County was growing fine wool; in Fairfax a considerable number of the fine-wooled sheep had been brought from Vermont and New York, and in 1852 it was reported that Mr. Dox, of Nelson County, sent 2,500 pounds of Saxony wool to New York, the produce of 900 sheep which had been driven to Virginia from New York. But fine-wooled sheep did not get into high favor, long-wooled being preferred.

At the fair of the Virginia State Agricultural Society in 1854 a premium was awarded to Theodore M. Davidson, Fauquier County, for a 4-year Spanish Merino buck, and one to Samuel F. Christian, of Augusta, for a 2-year-old Spanish Merino, and also for the best pen of Merino ewes. These were all the Merinos shown east of the Alleghany, but Dr. W. L. Wight and J. & W. Brady, of West Virginia, carried off some prizes for Spanish and French Merino sheep. Though many full-blooded Spanish Merino and high grades were brought into the State from 1847 to 1852, the fine wool-growing industry languished and the flocks were neglected or became a prey to the dogs. A few farmers cared for and sought to raise them in the Piedmont region, among whom was S. S. Bradford, of Culpeper, who, in 1856, had a flock of Spanish and Silesian Merinos from the flocks of George Campbell, of Vermont, and William Chamberlain, of New York. Mr. Bradford rarely had less than 1,000 fine-wools in a flock, and had a German shepherd to care for them. In good weather they were hurdled at night on the poorer spots of the field in which they grazed during the day. In rainy or intensely cold weather they were housed day and night. They were fed daily about 1 bushel of oats to the hundred head. In the grazing season they required no other food than the herbage.

A neighbor of Mr. Bradford, with 125 fine-wools, though never housing them even in sleety weather, and having no shepherd, got heavier fleeces from them, and lost proportionately less than Mr. Bradford by disease and casualties. The original cost of this flock was $2.50 per

ewe and $20 for a ram. For many years before wool was admitted free of duty the value of the annual wool clip averaged $2.02 to the sheep. That, with the sale of mutton to the neighbors, made the profits of the flock considerable. They were never fed anything but grass and corn fodder, and grazed on land which would not keep cattle or horses.

William D. Wallach, of Culpeper, also owned a small flock, of which, in June, 1859, he gave an account. His sheep cost him on an average $6 per head, including an imported Silesian ram and 3 Silesian ewes, the former valued at $50 and the latter $20 each. Throughout the feeding season he fed them daily an average of 2 bushels of oats to the hundred head, with as much wheat straw and cut and crushed cornstalks and blades as they could eat. Sometimes cornmeal, mixed with moistened wheat chaff, was substituted for oats. He housed them carefully at night in extremely cold weather and never permitted them to get wet. Early in May he commenced folding the flock in the open air every pleasant night, using light hurdles made of pine poles. They were permitted to rest three nights only on the same spot. Previous to the first night's folding clover and orchard-grass seed were sprinkled where they were to lie, and the next morning a light covering of straw was put upon the ground in the fold, and on that covering they rested two nights more, saturating it with their urine and leaving their manure. Wherever they were thus folded young clover and orchard grass grew luxuriantly.

The results were that Mr. Wallach lost but 2 per cent from his flock, and was offered 33⅓ per cent on its original cost for the lambs of the first season, which, with the manure, twice repaid their keep for the year. Their fleeces averaged him 6¾ pounds. The Silesian ram sheared 15¾ pounds, and some of the Spanish Merino ewes as high as 9 pounds unwashed wool, selling for 40 to 50 cents per pound. At 40 cents he realized 40 per cent the first year on the original cost of the whole flock, or, on the value of the two fields on which he grazed them, at $50 per acre, and the original cost of the flock together, a little more than 8 per cent per annum. All the wethers and most of the ewes that had lambed were found fat enough, on being sheared, for the butcher.

A not less important result was that not a single blue thistle or white daisy bloom was to be seen in either field in which the flock pastured, though the previous year both were overrun with those pests. This was also the case with the fields of two of the nearest neighbors, who had likewise each a flock of Merinos, and with those of Mr. Bradford, from whom Mr. Wallach made his purchase of sheep. Several others in Culpeper County had Spanish Merinos, and some full-blooded Saxony Merinos were owned near Lynchburg.

Although it was found that the Merino would thrive in every section of Virginia and fitted itself alike to the mountain regions, the plains of middle Virginia, and even the tide-water region, with its shorter

grasses, it failed to attain any importance in the farm economy of the State, primarily because of the depredations committed by dogs, secondarily that raising lambs and mutton for market paid better. The secession of the State in 1861, by throwing the eastern portion under the tread of large armies, was destructive to sheep of all kinds, and the years subsequent to the great war have seen no extended revival of the fine-wool industry. Some few flocks of Merinos, it is true, have been formed, but their output is scarcely appreciable. The largest of the kind in Virginia east of the Alleghanies in 1877 was that of Logan Osburn, Jefferson County, W. Va. He began building up a flock in 1872 from about 100 grade ewes three-fourths Merino, breeding them to a thoroughbred Spanish Merino ram. The fleeces of the first year's clip averaged 5 pounds each in the dirt. But care and attention and crossing with good rams increased both the length and strength of the staple and carried the fleece to an average of 6 pounds back-washed wool in 1877. His improvement did not stop here; the weight was carried up to 7 pounds and the wool realized the very highest prices and was much sought after by Eastern buyers. In 1888 Mr. Osburn's flock numbered nearly 1,700, and the clip netted the owner $4,000. The sheep are at least one-third larger than the Spanish Merino from which they sprung, and have increased in length of staple and weight of fleece at least one-third. There are other Merino flocks in that section of Virginia, and the success attending them, when properly cared for, demonstrates the capability of the country for fine-wool culture, as it has long been known for its excellent mutton. But Virginia proper, as circumscribed by the events of war, is not a fine-wool growing State.

The people of Virginia are, and have been for a longer period than elsewhere, great lovers of choice mutton. They began its improvement very early and have continued it. The old Arlington long-wools and Frederick sheep lingered long in many localities. The Southdowns followed the old Leicester and the new, and many were brought into the State from New York and by direct importation from England. Rezin D. Shepherd, of Shepherdstown, imported some Leicesters in 1838, and in 1841 Hon. Andrew Stevenson, then minister to England, and Bishop Meade, of Virginia, imported 3 Southdowns each—a ram and 2 ewes. These were selected from the stock of Jonas Webb, and 100 guineas were paid for the 3 that were presented to the bishop. The bishop's Southdown ram weighed 249 pounds; Mr. Stevenson's 254 pounds. Col. Josiah W. Ware, of Berryville, Clarke County, was an importer of the improved Cotswolds or New Oxfordshire as early as 1848, in which year he purchased 2 ewes that had taken the prize at the royal show at York. In 1849 he purchased 5 of the ewes that took the prize at Norwich, all tupped by a ram weighing 420 pounds that had taken the royal prize in 1847. He purchased of Charles Large, Northbeach, and none but prize sheep. In giving an account of his Cotswolds in 1855, Col. Ware said that originally he had a good flock of sheep, but found, beside the

fleece that each sheep at 4 years old on grass would not command more than $2.50, the best, fed on grain in the winter, would not bring over $4. To supply a butcher each year a lot of fat sheep of a farmer's own raising would require him to keep four lots on hand to sell one, the fleece but little more than paying for its keep. To rely upon the fleece alone was too insignificant a matter. At the highest price paid per pound in the United States, it would require many sheep to make a small amount of money. Not satisfied with this condition of affairs he determined to purchase some of the large mutton sheep of England, and chose the improved Cotswold to see what could be done with them. Believing it the true policy to have the best, as it soonest repays outlays, he imported each year the winners of the highest prizes of the Royal Agricultural Society of England, confident in his acquisition that if they beat England he must surely have the purest and best that England could produce. Col. Ware found, after putting three crosses of his imported rams on his ordinary flock, that the fleece greatly increased in weight, and sold for as much per pound as the fleece of ordinary sheep; and he sold the mutton from these crosses readily, the fall after 1 year old, for $10 on the farm, so that he sold out clean every year, keeping none over the winter but the breeding ewes and the lambs of the same spring. The result of the improvement was that where he formerly sold one mutton sheep 4 years old for $2.50 on grass and $4 on grain in winter, he sold 4 of his improved sheep for $40, and realized more on the wool. The success was not lost on the farmers of his section, who procured rams from him and improved their flocks, until, in the words of Col. Ware, "this little county of Clarke that I live in has now a reputation for mutton probably unequaled by any State in the Union. It is not unusual for a flock of 40 to 50 ewes, part bred, to yield in mutton and wool each year from $500 to $650."

The improvement in this county was emulated in others and the whole State was showing a great advance in sheep husbandry, when the war of secession exterminated many of her fine flocks and disheartened her people. But the sheep of Clarke, Loudoun, and of the entire Shenandoah Valley are still held in high repute and find good markets. In recent years the interest in sheep has revived and many fine sheep have been introduced, including the Cotswolds, Hampshires, and Shropshires. In 1872 Neville and Landale, of Salem, imported a number of Border Leicester rams and ewes, selected from the flock of Rev. Mr. Bosanquet, England.

The valley of Virginia, the Blue Ridge, and the Piedmont, are all admirably adapted to the production of the cultivated forage plants necessary for winter feeding, and in summer there is an abundance of white clover and blue grass pasturage. But with unrivaled advantages sheep-raising has not become a prominent industry in this section, and the fine mountain pasturage is not used. Some returns made to the Department of Agriculture in 1880 show possibilities.

Mr. John Carmichael, of Loudoun County, reported the value of spring lambs sent to Washington at $2.50 to $5, according to quality; that Western ewes, bought in the autumn for breeding, cost $2.75; their lambs averaged $2.30 and their wool $1 more. The ewes were fattened and sold in the fall for $4 and $5. This made the gross returns of the year about $8, or $5.20 above the cost of the ewe for feed and profits. A correspondent from Clarke County says:

It is far more profitable to keep the different varieties of the mutton breeds than the fine-wool or Merino breed in this portion of Virginia. I say this from my own experience and that of many intelligent gentlemen with whom I have conversed. The Cotswold sheep and its crosses with the Southdown are less liable to lose their lambs than the Merino. The lambs are more vigorous and hardy; then add their early maturity, their fitness for market at eighteen months old, and their almost double value when in market, and you have advantages which far outweigh the additional amount of food which the mutton sheep may consume in proportion to his size. I have said nothing about the difference in the value of the wool, because I believe there is very little difference; if there is any it is in favor of the mutton breed in this county. In January, 1869, I agreed to take from a gentleman in this county 100 Spanish Merino ewes to keep on shares, he giving me one-half the lambs and one-half the wool for keeping them until the fall of 1869. They were put in a field of 75 acres sod, with 45 acres of woodland attached; the pasture was good and they fattened upon it. At the same time 25 ewes of Cotswold and Southdown were put in the field; the Merinos in the spring produced 56 lambs, the 25 Cotswold and Southdown ewes raised 24 lambs. The feed was the same and the same care was bestowed upon each flock, for they were together all the time. All the Merino lambs were sold in October, 1869, at $2 per head, except 5, which had the foot-rot so badly they could not be driven to market; the Cotswold and Southdown would have brought double the money per head. These views apply to this county, which is only 50 miles from Washington, D. C., and about 85 miles from Baltimore.

Thomas F. Rives, of Dinwiddie, reported that Captain Shelton had a fine flock of grade Southdowns. He sowed rye and winter oats, thus supplying good winter pasture. His lambs were dropped in the early part of January and some in December. He generally had a lot of fat lambs in the market by the middle of April, and always commanded a good price for them, from $5 to $6 per head.

In Northumberland County a flock of 68 ewes, costing $3 each, produced 100 lambs the first year, which brought $5 each in May, netting nearly $300 above first cost, with the original flock and the wool on hand. They were turned into a wheat stubble seeded with clover, and had no other food and little attention. A Lunenburg farmer kept 48 sheep at a cost of $10 per annum for shearing and feed, exclusive of pasturage and care, yielding an average of $93 per annum. A Chesterfield County farmer had a flock of 40 worth $100, and had sold 24 for $60 and 150 pounds of wool for $34.50. The cost of the original 18 was $42, and the cost of keeping two years estimated at $30, leaving a gain equivalent to $122.50, paying well for care and investment. In Orange County the cost of keeping long-wooled Cotswolds was estimated at 50 cents a head, and 30 cents per head for a flock of 80 Merinos. The profit of one of the Cotswold flocks was $6.75 per head, of another $5.90

per head; the Merinos $6.20. It was believed that these figures could be increased by better attention, as grasses and herbage rendered the county a paradise for sheep. In Middlesex County 100 acres would graze 40 sheep, and by adding $1 to each sheep for winter feeding the following result was figured out:

For 100 acres	$600.00
Interest on money	36.00
2 rams and 40 ewes	100.00
Interest on same	6.00
	742.00
From 40 ewes, 50 lambs at $4	200.00
294 pounds wool, at 25 cents per pound	73.50
	273.50

A gentleman in New Kent County, Va., writes that he keeps 100 common ewes; breeds to Southdown; sells an average of 80 lambs annually, at $4 each, and obtains enough for wool to pay all expenses of keeping, while the benefit received by his land is equal to the interest on its value, leaving the receipts for lambs as interest and profits on investment. Another, in Clarke County, Va., tried Merinos and Cotswolds. Both breeds did well, but while the Merino lambs brought $2 each, the Cotswolds were worth $4, and the prolificacy of the Cotswolds was far greater.

In a system of mixed husbandry which, sooner or later, must be adopted by every State of the South, the sheep must be an important factor. To them must be committed the renovation of the worn-out lands and the sustenance of the present crop-yielding fields. They are the only animals which do not exhaust the land upon which they feed. Above all, they permanently improve it, and it is said of English agriculture that while there is no profit in growing sheep in England simply for their mutton and wool, sheep husbandry is still a necessity as the sole means of keeping up the land.

The same necessity exists in this country where some of the lands have been cropped to death. A case frequently cited is that of Mr. William Chamberlain, of Red Hook, Dutchess County, N. Y., the importer of the Silesian sheep, who purchased in 1840 a farm in that place of 380 acres, which had been used so long for selling hay that it was worn out. The hay crop in 1841 was 17 loads; 40 acres of rye gave 10 bushels to the acre; 25 acres of corn averaged 20 bushels to the acre; the rest of the farm pastured 2 horses, 4 oxen, and 1 cow. The land was so poor that it would not raise red clover. By using sheep as the producers and manufacturers of manure, he made this worn-out farm surprisingly productive. The product in 1866 was 600 tons of hay; 40 acres of Indian corn, yielding 50 bushels to the acre; 30 acres of wheat, averaging 15 bushels; 30 acres of oats; 8 acres of roots, and the pasturage of 300 sheep, and of the teams, cows, etc., necessary to carry on the farm and

to supply the families on it with milk and butter. Mr. Chamberlain's plan, when he first commenced making manure by using sheep, was to spread it thinly, so as to go over all the surface he could and make clover grow; and he said that, when he had brought his land to where it would produce clover, improvement thenceforth was easy and rapid. The sheep not only gave the first impulse, but were all the time depended upon as the great manure-producing power.

What is true in England, what is true in New York, is true also on some of the lands of the West and other places. Mr. Eli Stilson, of Wisconsin, by keeping sheep, is able to raise 24 bushels of wheat to the acre, while the average yield of wheat in Wisconsin is less than half that. There are cases in Vermont where sheep farmers have been compelled to abandon one farm after another as they become too fertile for profitable sheep growing. Mr. George Geddes, of New York, who raised sheep for many years in connection with wheat, said that with one sheep to the acre of cultivated land, pasture, and meadow, he raised more bushels of grain on the average than he did when he had no sheep to manufacture his coarse forage into manure, and to enrich his pastures to prepare them for the grain crop; and that, while producing crops on less acres and at less cost than he did before he kept sheep, he had in addition the wool and the mutton produced by the sheep.

Instances similar to these can be multiplied in every State, and the attending success can be secured any where in the South, and nowhere to better advantage than on the worn-out tobacco fields of Virginia and Maryland. They can be made to support a profitable sheep husbandry and the sheep can be made to renew the fertility of the lands. In this economy the grade Merinos will find their proper place in localities and barrens where at first less hardy breeds would starve.

In 1840 the number of sheep in the State was 1,293,772; in 1850, it was 1,310,004, and in 1860 it was 1,043,269. West Virginia was detached in 1862, and the figures for Virginia since that time are as follows:

1870	370,145
1875	367,500
1880	497,289
1885	477,450
1890	444,563

There was a decline in the number of sheep from 1880 to 1890 of about 10 per cent, and various causes are assigned. The Agricultural Report for 1887 gave as a reason the low price of wool and mutton, and the consequent loss of interest in them, though where attention was given better breeds were being raised, and in some localities farmers were beginning to set a portion of their lands in grasses, intending to substitute in part stock-raising for the grain and tobacco previously raised. Flocks were reduced in 1888, many breeders going out of the business entirely. No disease was reported, and in 1890 it was believed that the loss in

number was more than counterbalanced by the improvement in the quality by the use of better breeds and by better care, induced by the growth of opinion in their favor as a source of profit and as a valuable factor in mixed husbandry. At present sheep are about holding their own as to numbers, but better prices and an increasing demand for them have caused farmers to sell off closer and keep up improvement. There are many flocks of good sheep which are rightly appreciated and receive as good treatment as anywhere shown, and some of the old tobacco and wheat fields support sheep the year round at a very small cost. In general, however, not much care is bestowed upon this valuable stock in the State, save in the Piedmont region, where the farmers raise most excellent mutton and ship to the Philadelphia, Baltimore, and Washington markets good early lambs. Breeding flocks of the best breeds are successful and receive good attention. There is an abundance of the best pasturage for sheep, and nothing stands in the way of the industry but the destruction caused by the ever present dog and the indifference of the people to that destruction. Here, however, there is ground for hope in the future. There is agitation for legislation on the dog question that promises good results in the near future, for the question is not a partisan one and appeals to the highest and best interests of the entire people—a cheap and healthy food supply.

WEST VIRGINIA.

When this portion of the Old Dominion was detached and set up as a separate State it carried about half the sheep of the old State with it. In 1870 it had 552,327, against 370,145 of Virginia proper. The new State embraced in its limits nearly all the fine-wool flocks and some of the best mutton sheep. The pasturage of the new State and its adaptability to successful sheep husbandry is unequaled. In the extreme northwest the finest wool known in the United States has been grown, and the eastern part supplies some of the best mutton sold in the Philadelphia, Washington, and Baltimore markets. In former years many fine Merino flocks were kept in the counties bordering on Pennsylvania and Maryland, and such is still the case as to those bordering Pennsylvania, but those lying adjacent to Maryland now find more profit and advantage in the mutton breeds, of which they raise the best. Early lambs and fat mutton are the specialties of the industry and success crowns the attention given. There are many home flocks in this section kept to supply the family table and the local butcher. In the southwestern part of the State bordering Kentucky, and in the central portion, there are yet many common sheep, and many efforts have been made to improve them by crossing some of the imported varieties on them, but the results have not been attended with great success. The system of husbandry here pursued is not favorable to success, because it is too careless, in that the sheep are not housed in winter. There has been marked improvement in this respect, however,

within recent years, and the opening up of large sections of railroads has given increased interest to the possibilities of the sheep and with it greater attention.

There has been but little fluctuation in the number of sheep from 1870 to 1890; in the first year it was 552,327; in the last it was 508,654. But there have been counterbalancing changes. The revision of the tariff in 1883 caused a great decrease in the fine-wool flocks of the western counties, and the growing demand for good mutton increased the mutton flocks in the eastern counties. In January, 1888, the Agricultural Department reported "a decrease in the number of sheep in the western portion of the State, while in the eastern part there has been a large increase. There are more flock-masters now than heretofore, owing to the increased number of small flocks (extremely large ones being an exception), which gives the sheep better care and attention, and increases their value."

One of the largest, if not the largest, fine-wool flocks of the eastern part of the State was that of Logan Osburn, of Jefferson County, briefly noticed elsewhere. The origin of this flock traces to the purchase by William Osburn, of Loudoun County, Va., of fifteen mountain or open-wool ewes which were bred to a thoroughbred Ohio Merino ram. The offspring were bred in the same manner, and in 1872 Logan Osburn purchased of his brother William three head for $500, and in 1873 100 half-blood Ohio ewes were added at a cost of $800. In 1874 another addition was made to the flock of 100 thoroughbred Merinos, heavy shearers and of fine carcass. Each year the ewe lambs were retained and bred at the age of eighteen months. Mr. Osburn's practice was to keep the entire crop of lambs each season, weeding out and selling to the butcher the objectionable ones, and with them the old sheep, poor shearers, or broken-bagged ewes. After the wether lambs were sheared and attained sufficient age to fatten, they were disposed of for mutton. From 1878 to 1882 the flock aggregated from 2,000 to 2,800, the latter being the greatest number it ever attained. In 1880, from the sale of wethers, old ewes, rams, and wool, Mr. Osburn received $7,452, and in 1881 from the same sources, $8,620. A drought then ensued which necessitated the reduction of the flock by 1,000 head, this number being shipped to city markets and sold at very low figures. From this time until his death, in 1890, Mr. Osburn maintained the flock at about 1,600 to 1,800 head, giving fleeces of 7 to 9 pounds washed wool. The flock was sold in August, 1891, the purchasers being parties living in the county. The prices realized were from $3 to $10 per head, the average being nearly $5. Two hundred head were retained by his son, Logan Osburn, jr., of Kabletown, Jefferson County, who furnished the above facts.

The fact that the sheep of this flock, in but little more than fifteen years, averaged nearly one-third larger than the flocks from which they sprung, and that the weight of fleece and length of staple increased in

the same proportion, and that the wool brought top prices in eastern markets, gives striking proof of the value of the limestone lands, good water, and pure air of this section of country for sheep-breeding and wool producing. But the great wool-growing part of the State is that known as the Pan Handle in the extreme northwest, which has a history peculiarly its own, and which will be considered in connection with that of western Pennsylvania.

Sheep and wool of West Virginia, 1870 to 1890.

Year.	Number of sheep.	Wool.	Average weight of fleece per head.
		Pounds.	*Pounds.*
1870	552,327	1,593,541	2.88
1880	674,769	2,681,444	3.90
1885	637,665	2,705,071	4.25
1887	593,666	2,443,080	4.25
1890	508,654	2,288,943	4.50

The States of Delaware, Maryland, Virginia, and the eastern part of West Virginia are likely to continue their sheep husbandry in the direction of raising early lambs and mutton for market and home flocks for home consumption, such a system as is so successfully pursued in New Jersey. Quick returns coming from lambs 4 months old at higher prices than full-grown Merino grades have an especial attraction for the thrifty and enterprising farmer. Half-bred Southdown, Hampshire, Cotswold, Oxford, and Shropshire lambs, properly cared for, can be sold at a small profit on the meat alone, leaving the wool as clear gain. The healthfulness of the climate, the cheapness of both fertile and worn-out lands, and ready access to good markets make this section peculiarly suitable for mutton and lamb raising. There may be depressions in the market at times, as there are and must be with every industry, but the farmer who can raise a 4-months lamb and dispose of it for $3.50 to $5.50 and sell the wool from the ewe at 25 cents a pound, and send her fattened to the market in the fall, when she brings $3.50 to $5, will find the balance on the right side of the ledger in a series of years. The rapid growth of our cities and the increasing appreciation of mutton by city people is likely to sustain a large demand, and there is not much danger of a continued over supply. There is also a growing disposition in many localities in the country to discard pork and use more mutton, which gives much encouragement to the maintenance of small flocks for home consumption. Wool will be a secondary consideration with the farmer, but with the improvement of his mutton he will increase the weight of his fleece and furnish good combing wool, which will command a remunerative price, high tariff or low tariff.

NORTH CAROLINA.

Information regarding the introduction of the Merino sheep into the State of North Carolina is very limited. The earliest notice we have is

that on July 4, 1810, a Livingston Merino ram was exhibited at Camden Court House, on which occasion Lemuel Sawyer, a member of the National House of Representatives from North Carolina, made an address, in which he said: "The introduction of the Merino breaks the last link in the chain of foreign dependence, and is calculated to exalt the destinies of this country beyond the reach of accident or control."

After a wide range of fact and much metaphor he finally returned to the manufacturing interests and the ram, and called upon the ladies present to "support with their smiles this rising germ of national glory." An opposition paper in commenting upon the address advised by all means the encouragement of the "germ of national glory" by a bevy of ladies drawing themselves up in a row and bestowing their bewitching smiles on an old Merino ram!

There were some of the Jarvis importations taken into the State, and some attempt was made to establish the manufacture of fine wool. Of this, however, and the success of the Merino at this period we know less than that of any other State. There were some few Merinos in various parts of the State, but the stock soon ran down to a very low grade. In 1850 there was a revival of wool-growing, and in some counties the number of sheep doubled and wool became an article of export. Granville County reported that most of the winter clothing was made at home and in the dwellings of the people could be found carpets as nice as anywhere. Sheep needed no attention in summer and cost but 10 cents a head in winter. Some Merino sheep found their way into the State about this time, but the risk from dogs was too great to buy fine-wooled sheep to any extent, and in many sections the dogs were so destructive that farmers abandoned wool-raising and bought their woolen goods at the North. John A. Young in 1878, in a communication to the Department of Agriculture, stated that twenty years' experience in manufacturing the wools grown in the State had familiarized him with the manner in which the sheep had been cared for, and had convinced him that without great natural advantages their utter neglect would long since have exterminated them from the soil. There were but few plantations in the State upon which there was not to be found a flock of sheep intended to be only sufficient to supply the wool necessary to clothe the family and furnish an occasional mutton. These sheep were generally the native breed, rarely improved by crosses upon foreign blood.

As a general rule, these small flocks never entered into their owner's estimate of his valuable property, and they were never so treated. In the spring they were shorn of their fleeces and turned outside their owner's inclosures to seek their summer support in the forests and waste lands over which they chose to roam, and to run the gauntlet for life among hungry hounds and gaunt curs, almost as numerous as themselves. All that might escape, and were able to find their homes in the fall season, and would seek its inhospitalities for the winter, would be admitted within the gates, and permitted to eke out a scanty living in the denuded fields and

corners of worm-fences, which is supplemented by a morning and evening allowance of corn-fodder, which the compassionate and appreciative owner allows to be fed to them by a boy who has not yet attained sufficient size to be otherwise useful. The only protection against the rains and occasional storms of winter afforded to a majority of these flocks being such as their instincts lead them to seek by hovering on the sheltering sides of barns and outbuildings that may be accessible; a tumble-down or waste house on a plantation is a perfect asylum for them. Yet, under this treatment, the flocks of the farmers keep their numbers full, and occasionally multiply beyond their wants. Of necessity, their fleeces are light and inferior. Whenever an effort has been made to improve the stock by crossing upon Merino or other approved blood, the effect is satisfactory and lasting. From the universal custom of turning the entire stocks into the common "range" the impression of a Merino, Southdown, or other importation would manifest itself upon the flocks of the entire neighborhoods. So apparent is the improvement thus made that in purchasing the surplus brought to market there would be no difficulty in recognizing the wool from a neighborhood that had been favored by some enterprising farmer having imported from Virginia or Pennsylvania a pair of blooded animals. Without any change in the mode of treatment, these improvements are known to be distinctly manifest in neighborhoods 30 years after their introduction. Being able to withstand all this hardship and neglect, and promptly to respond to every effort to improve their quality or condition, it is evident that there is in North Carolina an adaptation of natural gifts to their peculiar wants.

There has been no marked improvement since the above was written. In 1890 66 per cent of the sheep were unimproved and worth on an average $1.51 per head, a price lower than the sheep of any other State in the Union with the single exception of Alabama, whose sheep were valued at seven cents less. Two-thirds of the wool was of a low-grade clothing or carpet, the latter predominating.

Sheep and wool in North Carolina, 1840 to 1890.

Year.	Number of sheep.	Wool.	Average weight of fleece per head.
		Pounds.	*Pounds.*
1840	538,279	625,044	1.16
1850	595,349	970,738	1.80
1860	546,749	883,473	1.61
1870	463,435	799,667	1.72
1880	461,638	917,756	1.98
1890	414,819	863,857	2.08

There is more in the possibilities of sheep-husbandry in North Carolina than in the reality. It possesses a medium temperature of climate, free from the severities of blighting cold as well as from the debilitating and parching heat. In the tide-water region where the influence of winter winds from the mountains is not felt, sheep can find a sustaining pasturage the entire year upon the wire-grass which grows spontaneously through the otherwise barren pine forests. Here they keep in uniform good flesh, grow to better maturity, and furnish better fleeces than in the higher regions of the State, contributing largely to clothing and feeding the owner's family without subjecting him to any expense and to but little trouble.

North Carolina embraces within its limits 48,000 square miles, of which Mr. Young, heretofore quoted, says:

Of this immense territory it may be said there is not a square mile of soil which is not susceptible of being made to produce a remunerative yield of tillage, and not one upon which would not ordinarily be found a good natural pasturage for sheep; nor is there a square mile of it upon which, when sheep were introduced and cared for, would not, year by year, be improved by their presence and pasturage upon it. There is no part of the State which does not possess immense natural advantages in soil and climate over the Southdown hills of England, the sterility of which rendered them almost uninhabitable until sheep were introduced upon them, by which they have been converted into the greenest meadows of the island. In the mountains and hill country more winter provisions would be required than in the balance of the State; but the shortness of the season would not demand much expense nor render the care of flocks burdensome. In three-fourths of the State no other winter provision would be necessary than the sowing of grasses and small grain for their pasturage, and the providing of cheap shelters from occasional seasons of inclemency. The farmers have practiced the habit of grazing their sheep upon their fields of small grain during the winter, which, when judiciously done, rather contributes to than detracts from their yield at harvest. In the pine lands and tide-water portion of the State they do live independent of the care of man, but certainly would reward him for care and attention.

The mountain portion of North Carolina, embracing some twenty counties, possesses a soil unsurpassed for fertility by any similar extent of mountain country on our continent. Here the celebrated blue-grass is an indigenous growth, and the mountain sides and alluvial valleys alike make the finest meadows of this favorite and never-failing pasturage. The winters here are short, and free from that intensity which characterizes more northern latitudes. This mountain portion of the State softens down eastward into a hill and dale plateau, embracing as many more counties, and this is succeeded by a lovely champaign country, extending to the Atlantic coast. The soil of this extensive mountain and upland country, embracing some sixty of the ninety-one counties in the State, is varied in character. A large proportion of it, having a rich clay subsoil, yields abundant crops of the cereals and of cotton and tobacco, and the balance, having an admixture of sand, is more easily cultivated, and, with light fertilization, yields quite as abundant harvests. All is susceptible of the highest degree of improvement, and all produces native as well as sown and cultivated grasses to a high degree of perfection.

Upon this mountain and upland country there can be grown every valuable breed of sheep known to the American shepherd, and efforts to raise large flocks have been unsuccessful, not by any want of pasturage or hostility of natural surroundings, but by the inattention of man and too great attention of the dogs. The Merinos have been tried in the foot-hills and on the uplands, and found to thrive surprisingly well, and where attention has been given improved English breeds have done well on the uplands and in some parts of the tide-water region. One of the most recent and interesting experiments was with the Cheviot sheep in 1884. In the fall of that year a pair of them were turned out on the mountain range in the western part of the State, with no more care given them than the native sheep had, and they passed through the winter in good order. The ram, a yearling, sheared 11½ pounds of fine long wool; the ewe dropped two lambs, one of which was lost. There were some half-bred lambs from a cross of the Cheviot ram on

APTER CURTIS.

CHEVIOT RAM.

the common mountain scrub ewes which were very fine, approaching in appearance to the pure-bred. This and other similar experiments with mountain sheep leads to the conclusion that the Cheviots, the black-faced sheep of Scotland, and allied breeds, bred to live upon the herbage and rough growth of the elevated moors, would thrive on the mountains running from northern Georgia on the south, through North Carolina, East Tennessee, the two Virginias, and to Pennsylvania on the north.

SOUTH CAROLINA.

Although South Carolina was the first State in which an effort was made to encourage the importation of the Merino, it was not the most forward in availing itself of the early arrivals in the Northern States. It was thought by the planters of the State that great advantages would be derived from raising a wool that would mix well with cotton, and several trials were made in that direction with the wool of the native sheep, which was very fine and considered the equal of English wool, if not superior to it. These trials were so successful and the cloth so produced from the native wool so satisfactory, both as to cost and quality, that in May, 1808, Henry Izard purchased from Dr. James Mease, of Philadelphia, a Merino ram believed to be of the Humphreys flock, descended from the Humphreys ram owned by Thomas Bulkley and loaned to Dr. Mease. Immediately following this other Merinos were brought from the North into various parts of the State. But the greater part of those raised were mixed bloods. The easy acclimation of these sheep at the northward, and the great profit derived from them, joined to the persuasion that they would thrive equally well in South Carolina, induced several merchants to import a few of the mixed breed from the Northern States, and some full-bred Spanish Merinos into Charleston. The progeny throughout the State was superior in form and size to the parent stock, and the fleeces were decidedly finer, showing its great advantage and the practicability of adapting it to the State. But the Merino did not enthuse the South Carolina people. Cotton was their staple and they wanted none better. The importations of 1810 and 1811 furnished them a few of the full-blooded Merino, as elsewhere stated, but at no time did they display that avidity for them that characterized the people of the Eastern and Middle States. They were satisfied apparently with the three or four kinds of sheep they had, the most remarkable and the only one worthy of observation resembling the Southdown, described as having no horns, its legs and face gray, head and upper part of the neck thick, the pile planted closely on the pelt, fleeces unmixed with hairs. An individual experience with the Merino is given in an extract from the address of Dr. John S. Bellinger before the Barnwell District Agricultural Society, in 1821:

Sheep answer well on our pine lands, and when we reflect that a considerable portion of the clothing of our inhabitants consists of domestic fabrics, the improvements of our stock by the Merino breed appears well worthy the attention of the

society. Having nine or ten years ago procured a pair of this breed, they seem to fatten easier than the common sheep; and the wool is very superior in quality and quantity. What must enhance their value much, their wool does not fall off, and this marked distinction from the common breed shows itself even in the three-eighth blood. My breed of sheep having lately been further improved by a ram of this blood, presented me by a relative (William Bellinger, of Lemmon Island), it will afford me pleasure to extend the breed further than I have done, by exchanging stock. I have now some excellent cloth made with wool sent to Newport, R. I., five years since; it proved sound and good quality.

There were a few fine flocks in the State, among them that of Wade Hampton, father of the recent United States Senator of the same name. The records of these flocks are not preserved, and for causes operating here as in Virginia, mostly political, the Merino did not gain an aggressive foothold.

Efforts, however, were made from time to time to stimulate an interest in them, and the letters of Henry S. Randall, in 1847, discussed the whole subject of sheep husbandry in the South and called particular attention to the mountain region in the western part of the State as favorable to the Merino, where large numbers could subsist during the entire winter on the hardy wild herbage which continues green in the forests and on some lowlands. Climatic conditions were favorable, the cost of raising them was very small, and Mr. Randall set forth with much minuteness how a flock of common sheep could be graded up to high-class sheep of the Merino breed, the management of a flock, the probable market for wool, and other facts necessary for the wool-grower to know. About the same time a report was made to the agricultural society of Pendleton, stating that as far as latitude was concerned experiments had been made both north and south of that place which proved that the Spanish Merino wool neither degenerated in quality nor quantity of fleece. A flock was known in Chester County in 1844 that had been kept for thirty years and shown no diminution of fleece. They were a cross of Escurial and Guadaloupe and had been bred in-and-in during the entire period. In 1845 a flock was owned by B. F. Taylor, near Columbia.

In 1850, in almost every part of the State, nearly every farmer had a small flock of sheep to supply wool for winter clothing; for any other purpose they were not raised, except to a limited extent near Charleston. People would not eat mutton, consequently sheep were raised only for wool for domestic use. There were some small flocks of grade Merinos and in Chester County, in 1850, W. S. Gibbs raised some full-blooded, quite as fine as his original Escurial stock, but the full-blooded wool was too fine for farmer's use. For twenty years he raised as fine wool as was raised at any place north, judging from comparison of samples. In 1854 the Charleston Mercury announced that the experiment of rearing fine breeds of sheep for wool in the upper part of the State promised complete success.

It was generally admitted that the Merino sheep could be grown with

profit, but the industry was not pursued. But again, in 1878, the subject was revived by the preparation of a special report on the subject by the United States Department of Agriculture. In this report J. Washington Watts, of Laurens County, who had been a breeder of sheep for many years, states that he found the Spanish Merinos the most profitable, the first of which he had from the New York flock of Mr. Randall. He had crossed the Merino with all the breeds then known in the State, and said that if wool-growing was the primary consideration he would by all means raise the Merino. They did not mature as early as the other breeds, but when matured made as good mutton as any breed he had ever raised. The actual cost of raising them was not over 60 cents a head, and the annual clip of unwashed wool per sheep from full-blood Merinos was 7 pounds. The average number of lambs raised was 80 per cent. His pasture was broom sedge and Japan clover until after harvest, when his sheep were allowed the run of the grain fields. For winter pasturage he usually sowed rye lots for the ewes and lambs and gave all the flock the run of oats sown in August and September. As a mixed food cotton seed was wholesome and economical.

Although mutton was not formerly much eaten in South Carolina, there were many who appreciated it very highly and kept fine mutton flocks. Col. Wade Hampton had a fine Leicester flock in 1845, and 60 lambs dropped from it that year produced, in 1845, when 14 months old, 11½ to 13½ pounds of wool each, and lambs of 1845 had 4-pound fleeces in July. Col. Hampton had Southdowns also, and there was a general dispersion of the best breeds over the State.

The commissioner of agriculture of South Carolina instituted some inquiries as to the condition and prospects of sheep husbandry and the results were published in 1881. There were very few localities in which sheep could not be raised in sufficient numbers, at least for home consumption, at a very moderate cost; and there were many favored localities where they could be profitably raised in large numbers. To be profitable they should be raised with a view to what could be made both on the wool and mutton, and the breeds combining these qualities should be selected. With very little care and small expenditure every farmer could raise annually mutton enough to supply his family with the best and most nutritious food, and sell wool enough to add considerably to his income. The great unanimity expressed for the Merino and its grades for crossing is somewhat remarkable, and the reports from various counties of the State indicate its general prevalence in small numbers. Very little attention was paid to the improvement of breeds; the Merino, the Southdown, the Leicester, the Cotswold, the Broad-tailed sheep and the natives had all been crossed in various degrees, but the Merino grades were good wool producers, hardy, thrifty and fair for mutton, averaging in some counties 4½ to 5 pounds of wool per head. In some counties natural pasturage afforded them their entire living; in

others they were sometimes fed cotton-seed and oats. The average cost of raising sheep per head throughout the State was 54 cents; for raising a pound of wool 10 cents. The average yield per sheep of all kinds was 3 pounds.

While the average of wool per head does not equal that from the flocks of the North and the West; the cost of raising sheep is so low that the industry would be a paying one but for that curse of sheep husbandry all over the country, the worthless dog. Ten per cent of the sheep of South Carolina are annually killed by them, and their existence prevents the development of flocks. Col. Watts kept up his flock of Merinos, and at the State Fair of 1889 showed some rams and ewes, the only Spanish Merinos on the ground. The show of Southdowns, Cotswolds, Oxfordshires, Shropshires, Broad-tailed sheep, and Angora goats was very creditable.

Sheep and wool of South Carolina, 1840 to 1890.

Year.	Number of sheep.	Wool.	Average weight of fleece per head.
		Pounds.	*Pounds.*
1840	222,981	299,170	1.28
1850	285,551	487,233	1.70
1860	233,509	427,102	1.87
1870	124,594	156,314	1.25
1880	118,889	272,758	2.29
1890	102,031	293,773	2.88

The advantage of the sheep as a renovator of the land is shown in one instance in South Carolina. In 1866 a planter of Fairfield County bought 38 common sheep and a Leicester ram. Afterwards he bought a Merino ram and then a Southdown. In 1873 his flock of 38 had increased to 350 sheep, worth $1,000. His wool had netted him $900, his mutton $875, beside what his family consumed. No care was taken of the sheep except to salt them and give them a little cotton-seed in winter. Their manure so enriched 30 acres of land that it raised 1,000 pounds of seed cotton in 1873, where it raised but 200 pounds in 1866.

Upon hilly, poor land in South Carolina the Merino thrives best; upon rich pastures the Southdown, the Cotswold, and the Shropshire, while the low, flat lands are not fit for sheep of any kind.

There has been a very decided improvement in the sheep husbandry of South Carolina within the last five years by the introduction of improved breeds. Many Merino rams, Shropshires, and Southdowns have been crossed on the flocks throughout the State; more care is paid to the sheep, and the business is found to pay where attended to. Any well cared-for flock of improved sheep will pay 80 to 100 per cent, as either the lambs or wool will pay all the expenses, and the other crop is the profit.

There is not only a great indifference to sheep and their products in

South Carolina, but a deep-seated hostility against them. Some of this hostility is inherited from those who looked upon sheep as rivals to the cotton plant. A prejudice against them difficult to remove is that as sheep require grass the grass will stop cotton culture. Grass is considered the great enemy to cotton culture. If half the area of South Carolina, now annually planted in cotton, were devoted to grass and turned into sheep walks, well stocked with good sheep, it would in ten years enrich the people of the State fourfold that the same area of cotton would, and the land would be renovated to a degree that it would yield double the amount of cotton now raised upon it, and would maintain its fertility far beyond the time vouchsafed by patent fertilizers. There is probably no State in the Union that needs a diversified agriculture more than South Carolina, and in that diversified agriculture the sheep should be a prominent factor, not only for its flesh and wool, but as an industrious renovator of the soil and a gleaner of briers and weeds. There is no apparent reason why this day should not be hastened, save the indifference of those who should lead public thought. The climate of the State is congenial to sheep; grasses and other green and succulent food can be cultivated and the cotton-seed that is annually wasted or but partially utilized would support thousands. That they can be raised cheaply is shown by the reports of the State officials, and with care, proper management and protection from dogs the business would be highly remunerative.

GEORGIA.

That portion of Georgia adjoining Florida early received the Spanish sheep, but whether of the Merino breed or the coarse-wooled Churros is a question. If of the former, it has become greatly degenerated through many years of neglect. It is, however, a fact that in the pine woods of that country sheep are found still bearing the characteristics of the Merino, yielding a fine wool, but of whose origin nothing is known save that tradition says they were descended from Spanish sheep.

The first sheep of undoubted Merino blood known to have been introduced into Georgia was in November, 1810, when 4 rams were offered for sale that had been sent from New York. In February following a ram and ewe, said to be Escurials, were offered for sale, and in May, 1811, there was a large consignment to Mr. Scott, from Massachusetts, of which but few were sold, the remainder being sent back to Massachusetts. Of all the seacoast States Georgia was the least desirous to accept the animal, a fact sufficiently accounted for by the excellence of its native wool and the great interest her planters had in the cultivation of cotton.

No record remains of the purchasers of the few sheep shipped to Georgia, or of their subsequent history; but at the close of the war of 1812, when Capt. Butt's company of Hancock County men were about leaving Savannah for their homes, March 1, 1815, John McQueen, on

on whose plantation this company had been stationed, gave the men as a present a full-blood Merino ram, to be conveyed to the upper country for their mutual benefit. He certified that it was of pure Spanish blood, and of the best flock that ever came to America.

We lose all trace of the full-blooded Merino in the State until 1847, when Richard Peters purchased a farm in Gordon County in order to try sheep-raising in connection with other stock. He obtained 100 native ewes, and after a trial of the Cotswold, Southdown, Oxford, and Leicester, purchased, in 1850, a flock of pure-bred Spanish Merinos, and was remarkably successful with them. Writing in 1878, he said that he had tested the Spanish and French Merinos, and also the Southdown, Oxfordshire Down, Leicester, Asiatic broad-tailed, Tunisian, improved Kentucky Cotswold, and native sheep. He had also crossed nearly all these varieties, and those between the Spanish Merinos and native, and the Cotswold and native, had proved most profitable. For general purposes of wool and mutton he recommended most decidedly the cross from native ewes and Spanish Merino rams, the progeny showing marked improvement, having constitution, fattening properties, thriftiness, and a close, compact fleece. For long combing-wools the best flock that could be built up was by taking the native ewes as a basis, using the Spanish Merino rams for the first cross, and then the Cotswold, to give more size and longer staple. Mr. Peters' Merino sheep were very healthy. If the winters were mild they required feeding about thirty days; if cold and wet, twice that time. In 1871 Mr. Peters added to his flock 25 Merino ewes purchased in Vermont at an expense of $1,000.

In 1868 Dennis Johnson, of Calhoun, Ga., reported his experience with sheep, extending over many years. He had tried all the breeds and was successful only with the Spanish Merinos. The cross between the Spanish Merino and common ewes proved a perfect success, the offspring being large, healthy, and strong, very prolific, and good nurses. In 1853 he sheared 250 pounds of wool from 50 head. The flock grazed upon woods range in summer and blue grass pasture in winter, with no extra feed, except an occasional allowance of a little bran.

Mr. Robert C. Humber, of Putnam County, in middle Georgia, reported to the commissioner of agriculture of Georgia that he kept 138 sheep of a cross between the Merino and the common stock. They cost him nothing except the salt given them, while they paid 100 per cent on the investment in mutton, lambs, and wool. They yielded an average of 3 pounds of wool per head, which was sold in 1875 at the very low price of 25 cents. It cost nothing except the shearing. His sheep ranged on Bermuda grass—old fields in summer, and the plantation at large, embracing the fields from which crops had been gathered and the cane bottoms in winter. They were never fed at any season.

Dr. Thomas P. Janes, in his Manual of Sheep Husbandry in Georgia, cites this case:

Mr. David Ayers, of Camilla, Mitchell County, in southwestern Georgia, where snow never falls, and the ground seldom freezes, and where the original pine forest is carpeted with the native grass, says his sheep, 3,500 in number, cost him annually 14 cents per head, clip 3 pounds of unwashed wool, which sells at 30 cents per pound, giving a clear profit of 90 per cent on the money and labor invested in sheep. Land suited to sheep raising can be purchased in this section of the State for from $1.50 to $10 per acre, according to location. Mr. Ayers does not feed his sheep at any time during the year, neither had he introduced the improved breeds, using only what is known as the native sheep. Of course, the cross of the Spanish Merino on this stock would give better results in both quantity and quality of wool. These sheep receive little care except to be gathered up once a year to be sheared and marked. Mr. Ayers complains of the ravages of dogs on the sheep and of hogs and eagles on the lambs.

The records of the United States Department of Agriculture furnish an illustration from Pulaski County. A planter bought 800 head of sheep in 1868, and furnished this statement:

Dr.

Cost	$750	
Cost of hand to care for them, $12, and $15 per month	180	
Cost of salting and incidental expenses	20	
		$950

Cr.

2,000 pounds of wool, at 30 cents per pound	600	
Increase, 225 lambs, at $1 per lamb	225	
15 acres of land, well manured, $10 per acre	150	
700 sheep on hand, at $1.50 per head	1,050	
		2,025
Total profit		1,075

This, like that of Mr. Ayres, was the scrub stock of the piney-wood counties of Georgia, the "piney-woods sheep," but it shows that in Georgia, where pasturage costs nothing, sheep may be profitable even for their wool alone.

In a communication to Mr. John L. Hayes, under date of January 1, 1878, Mr. Richard Peters, of Atlanta, said that nature had given Georgia three marked divisions, middle, lower, and upper Georgia, the altitude rising with the latitude. Each of these sections has its own especial advantages for wool-growing, and it can be profitably pursued in either section. The lower part of the State, across which there is a belt of country of an extent northward from the coast and the Florida line from 100 to 150 miles, is the land of the long-leaf pine and the wire grass, and the home of the piney-woods sheep. Flocks of these native sheep, as high as 3,500 in number, are found here and there scattered over the surface, receiving but little care or attention except at the annual gathering for shearing and marking. Very little can be said for the quantity or quality of wool raised here, and Mr. Peters did not sub-

cribe to the opinion held by some that its advantages were as great for large flocks as the ranges in Texas and California. He said:

> The pasturage of this section, called wire grass, affords fine grazing for sheep in the spring, but for permanent and continuous food it can not be relied on. A fair experiment in sheep raising, uniting good attention, selection, and crossing, with a determination to secure the best development in frame and fleece, has not been made in this section for many years. If it were properly attempted, by combining Bermuda with the wire grass for spring and summer pastures, and red winter oats for one or two months in winter, for the ewes and lambs, I think the result would prove of the most satisfactory and profitable character.

In the middle portion of the State the Bermuda grass prevails, and under the cotton system of culture it was the dread and bane of the planter; but now, for its nutritious qualities and compactness of sod, it is considered as valuable and as reliable as any grass, not excepting the Kentucky blue grass. It affords sheep the very best pasture for six months of the year, and if managed as on the pastures of Kentucky, it would pasture the entire year.

In upper Georgia the country is hill and valley, the land changing very rapidly; the pasturage sedge, crab and other native grasses. Of the cultivated, the orchard grass, red and white clover on upland, and red-top on lowlands, succeed admirably. Lucerne and German millet give ample supplies of good hay. Red, rust-proof oats—a reliable winter variety, if sown in September—can be pastured during the winter and early spring, and then yield a full crop of grain. The same may be said of barley, rye, and wheat.

Mr. Peters believed that the future sheep husbandry of the State, if intelligently pursued in accordance with its natural divisions, would show three distinct systems. That of northern Georgia would somewhat resemble the industry in Ohio, Pennsylvania, New York, and New England; that of the middle of the State, Kentucky; and that of the southern portion (with shepherds and dogs) Texas, Colorado, and California.

But Georgia has not yet become a wool-growing State. The people raise neither sheep nor wool sufficient for their own use, although they have one of the finest sheep-raising States of the country, where for nine and ten months of the year, and sometimes the year round, they keep fat on the native grasses. The life of the animal has no protection from man or dogs, and the latter eat more mutton than the former. Nature does much for the sheep, but man expects more; he acts as if he believed that the sheep should care for itself and in due season lay his fleece at his feet clean-washed and free from burrs and beggar-lice.

But that sheep raising would pay as a factor in mixed husbandry is shown by the experience of many. The commissioner of agriculture of Georgia reports that the average annual cost per head of keeping sheep did not exceed 54 cents. The average cost of raising a pound of wool was only 6 cents, while the average price for which the unwashed wool

sold was 33⅓ cents, or 27½ cents net. The average yield of unwashed wool to the sheep was 3.44 pounds, which, at 27½ cents net, gave a clear income in wool from such sheep of 94 cents. The average price of lambs sold to the butcher in Georgia was $1.87. The average price of stock sheep was $2.68 per head, of mutton sheep $2.75 per head. This estimate is considered too favorable, but, allowing considerable reduction, it shows that sheep raising will pay in Georgia for wool alone, and, where near a market, the profit can be enhanced by the sale of mutton. The commissioner's report further states that of those who tried crosses, 98 per cent found the cross of the Merino and the native the most profitable. The principal, and in fact the only, drawback was the dog. It is estimated that 20 per cent of the sheep of the State are annually killed by the dogs, and nearly 5 per cent by their thriftless owners. This is a grievous tax, and well calculated to discourage the sheep industry.

The State agent for the United States Department of Agriculture reported in 1887 that the sheep industry was on the wane, as it had been for several years past. The absence of any adequate protection from dogs and "old sows" was sufficient to deter any new ventures in sheep husbandry in middle Georgia, and the business then, as it always had been, was conducted in the most slipshod manner conceivable. No business paid better than growing wool, and the farmers asked no protection except such protection as they might demand and had a right to expect through their own State legislature. A decline from 1887 to 1888 was attributed to the same cause, and again in 1889 a continued decrease was charged to dogs, hogs, and eagles. In 1890 the interest in sheep and wool-growing was still on the wane, the number of sheep was slowly decreasing, and it was stated as a remarkable fact that a larger percentage of losses by dogs occurred in those counties and sections where but a few sheep were kept. In the largest sheep-growing counties public sentiment, based upon a common interest, was death to sheep-killing dogs.

Sheep and wool in Georgia, 1840 to 1890.

Year.	Number of sheep.	Wool.	Average weight of fleece per head.
		Pounds.	*Pounds.*
1840	267,107	371,303	1.38
1850	560,435	990,019	1.76
1860	512,618	946,227	1.84
1870	419,463	846,947	2.00
1880	527,589	1,289,560	2.44
1890	411,846	1,198,379	2.91

Of these 411,846 sheep in 1890 probably 90 per cent were unimproved scrubs, yielding a low-grade clothing wool, and some grading down to carpet wool. Of these scrub sheep of the southern part of Georgia, the degenerated Merino, notice will be taken when the sheep of the Gulf Coast States come under consideration.

The section of country embraced in this chapter breeds to-day every variety of sheep known in the United States, and every breed does well. There are still a few large flocks maintained, but in general the flocks are small. We seldom find a farmer exclusively engaged in the business, but we find many who raise a few small flocks, running from 15 to 50 animals, well cared for and yielding some profit. Unfortunately the majority of farmers raise no sheep, and the reason given for the neglect is the want of proper laws against dogs.

Since 1870 there has been a decrease in the number of sheep, but the improvement in quality is ample compensation. The great improvement in Virginia, Delaware, and Maryland since 1882, and the slight improvement in the South Atlantic States, has been almost exclusively due to the use of Shropshire rams, which are now being extensively imported and generally disseminated.

CHAPTER VI.

THE SHEEP HUSBANDRY OF WESTERN PENNSYLVANIA AND THE PANHANDLE OF WEST VIRGINIA.

The district embraced by the southwestern counties of Pennsylvania and the counties of Hancock, Brooke, Ohio, and Marshall, of West Virginia, is one of the leading sheep-breeding sections of the Union. Much of the soil is limestone, friable, and easily broken up, cultivated without difficulty, and containing no element injurious to the feet and fleece of sheep. Such is the general freedom of the soil from everything that can destroy the whiteness, pliability, and silken character of the fleece, that after washing the sheep in the spring, preparatory to shearing, they are turned out in the pasture fields with their fleeces still wet, without the slightest injury to the wool. Water is abundant and of the very best character—cold, clear, and invigorating, meeting every requirement of the shepherd. It is written by one of the leading breeders that the whole section might be divided into 10 or 20-acre lots, each of which would have either a perennial stream or a never-freezing fountain.

The natural fertility of the soil, taken in connection with the genial climate, makes this section the favored home of the fine-wool industry. Pasture and winter food are abundant, and of the best kind. Of the former, red clover, timothy, and blue grass are the principal varieties, and of the latter are the grains, corn, and oats. Corn-fodder, clover, hay, and timothy make excellent rack feed. All these products are produced in such abundance that the cost of wintering sheep and other stock is much less than in most of the other sheep-breeding States east of the Mississippi. The climate, though much milder than that of New England and some parts of the Middle States, is sufficiently severe to cause the consumption of food enough to produce a heavy fleece, ranging from 10 to 20 pounds in Spanish Merino ewes and 15 to 28 pounds in rams, weights which are increased with greater care and shelter.

There is an advantage in the diversified nature of the surface of the country, thus commented upon by a successful sheep breeder:

> In our deep valleys, watered by cool, pure, never-failing streams, in the smooth slopes of the hills covered with luxuriant and succulent grass, and in the lofty rounded crests or table-lands that crown the summits, the shepherd has an assemblage of all the good things that nature can provide for him.

This, said of West Virginia specially, applies to the whole country adjacent. It furnishes in the warm months of the year a high and dry

range for flocks, and at the same time sheltered valleys and nooks, where protection is offered from storms and winds. It is no uncommon thing to see sheep fed out in the open field the entire winter, but the practice is less common than formerly.

The native sheep of this region, as distinguished from more recent stock, were from several sources—from New England, from New York, and from Virginia. They were hardy, long-legged, and coarse-wooled, with the speed and endurance of a foxhound. They furnished a good wool, which answered the purposes of the early pioneer industry, and which was converted by the aid of backwoods fullers, hand looms, and busy fingers of the women into garments which supplanted buckskin, but this wool was not of a quality to compete in the market with that produced in the older settled country. Fulling-mills were numerous, and every house had hand cards and as many spinning-wheels as there were females in the family. The wool was carded and spun in the household and then sent to the fulling-mill.

The coarse-wool sheep soon gave way to the fine-wool Merino, and from the first introduction to the present day the people have been, to a greater or less extent, employed in breeding Merino sheep and raising Merino wool. The industry took a firm hold on the farmers and became the commanding agricultural business of a large portion of the population. The business was suited to the country; every farmer that could do so engaged in it and many of them grew rich. The productive acreage of the country was not largely increased, but the fertility of the worn-out lands of some sections was restored by sheep husbandry. Here superfine Saxony wools were grown to perfection. Saxony flocks, numbering sheep by the hundreds and thousands, became acclimated and hardy and produced wools that enriched their owners, and some of these flocks still exist. The most of them, however, were long since superseded by the heavier-wooled Delaine, the Black-Top and other Merinos. The Saxon, the French, the Silesian and the Vermont Spanish Merino have all been tried, but the general conclusion at the present day is that the varieties of the American-Spanish Merino, improved in stamina and form, enlarged in carcass, and having the weight of fleece almost doubled by a long course of patient and careful breeding, are for all purposes the most valuable descendants and representatives of the original Spanish Merino which can be obtained.

In 1804 George Rapp introduced Merino sheep into Harmony, Butler County, Pa., where he also erected a large woolen factory and commenced the manufacture of broadcloth from the wool of these sheep. The Merinos were special objects of attention, and were used in some cases by the neighboring farmers to improve their own flocks. It is believed that Mr. Rapp's flock was founded on the Humphreys Merino. In 1811 it was said to consist of "one thousand sheep, separated in three divisions. The first were all of the Merino breed, the most of them full-blooded; the second about half Merino and half common; and

the third were all common, with some Merino rams among them. They were under the charge of three shepherds, who slept beside them all night in movable tents, and a watchman from the town attends them during the day."*

There were some fine rams in this flock, among them one for which $1,000 had been paid. In addition to the wool raised from this flock, the factory established by Mr. Rapp worked wool brought in from 50 miles around, which gave great encouragement to the raising and improvement of sheep, and some full-blood and high-grade flocks were formed. A Merino ram from this flock purchased in 1813 for $100 was the foundation of the flock of Gen. Thomas Patterson, of Washington County.

Mr. Rapp manufactured broadcloths and narrow cloths of a superior quality. Mr. Melish, who visited the factory in 1811, writes:

> In the wool loft, 8 or 10 women were employed in teasing and sorting the wool for the carding machine, which is at a distance on the creek. From thence the roves are brought to the spinning house in the town, where we found two roving billies and six spinning jennies at work. They were principally wrought by young girls, and they appeared perfectly happy, singing church music most melodiously. In the evening sixteen looms were at work, besides several warpers and winders. We saw 450 pieces of broad and narrow cloth, part of it of Merino wool, and of as good a fabric as any that was ever made in England. We were told that they could sell the best broadcloth as fast as made at $10 a yard.

Mr. Rapp removed his colony and the greater part of his sheep in 1814 to New Harmony, Ind., where he established his sheep farm and the woolen manufacture, returning to Pennsylvania in 1824 or 1825, to settle at Economy, Beaver County, where he laid out 4,000 acres in sheep walks and bred many sheep, the wool of which supported a prosperous woolen manufacture.

The largest and most successful woolen factories of this period were those whose owners bred their own sheep near their own doors. Where this was not convenient flocks were introduced into the neighborhood and let out to farmers to be cared for and increased, on such terms as could be agreed upon. The mill operatives were the daughters and younger sons of the neighboring farmers.

A Pittsburg paper of June 22, 1810, notices the arrival of 200 Merino sheep at the farm of Brintnall Robbins, 1 mile from town, on the preceding Wednesday, from Col. Humphreys' flock in Connecticut. They were offered for sale or exchange for cattle or flour. Many of them were disposed of in the vicinity and the remainder went westward. A few descended the Ohio.

In the great movement westward from 1810 to 1820 thousands of sheep were driven through Pennsylvania on their way to Ohio and

* "Travels through the United States of America." John Melish, 1815.

other western territory, and many of them were Merinos. A letter from Robbstown, Westmoreland County, published December 4, 1811, says:

> From October 6 to November 6 (1811) 236 wagons and other wheeled carriages passed through this place to Ohio with families—with 4 of the small wagons were 60 persons—within the same time 600 Merinos passed in the same direction.

This gives but a faint idea of the continuous movement. Along its trail were left lame and worn-out, exhausted sheep, singly, in pairs, and by the score. Where it was possible they were sold to the settlers on the route; when they could not be sold a meal, lodging or something else was taken in exchange. Some were left behind without recompense; in any event many sheep were thus distributed to the great gain of that section of country.

In 1817 several hundred Merinos were taken to Meadville, Pa., by Judge Griffiths, of New Jersey, and H. J. Huidekoper, agent of the Holland Land Company, and became the source of many fine flocks in Crawford County.

The crossing of these full-blood and high-grade Spanish Merinos on the hardy, common sheep of the pioneers produced an excellent wool-growing sheep over all western Pennsylvania, and farmers made great improvement in them, and raised many full-blood and grade flocks. From 1827 to 1835 the Saxony sheep and their grades were introduced, chiefly from the flocks of Wells and Dickinson, of Steubenville, Ohio. This cross reduced the weight of fleece without a corresponding increase in price. From 1845 to 1850 efforts were made to remedy this deficiency in the fleece by the use of full-blooded Spanish or French Merino rams. The latter were at first preferred and in 1848 some were introduced. The opinion was entertained by most breeders that the French Merino would make a fine cross with the Saxon and Spanish Merino flocks. They were heavy-boned, rough built and in no way handsome, but of large vigorous frames, the rams weighing at four years old 150 to 175 pounds gross or live weight. The wool was not fine but of rather a harsh character. These sheep attracted considerable attention, but a fair trial in several flocks led to their condemnation. They greatly injured the wool of every flock into which they were introduced and growers disposed of the produce as early as possible and eliminated the blood from their flocks. They were not only hard to keep but required more feed by about one-fourth than the Saxon or Spanish Merino. The rams cut about 8 pounds of wool, when washed on the sheep, and the ewes 4 pounds. Among the very few who stuck to a small flock of these sheep while nearly all were discarding them was John S. Goe, of Fayette County, who determined to give them an exhaustive trial. We have the record of their shearings for three years. In 1856 2 rams gave 14¾ and 15 pounds unwashed wool and 2 ewes 14¾ and 14⅞ pounds. In 1857, 18 rams averaged 8⅓ pounds washed wool. In 1859, 1 ram gave 22½ pounds of unwashed wool, and 8 ewes averaged 10⅛ pounds. Two ewes averaged 8¼ pounds washed on the back. At this shearing a Silesian

ram sheared 16½ pounds unwashed wool, and 3 ewes 7 pounds each. Four Silesian ewes averaged 3 7/16 pounds washed wool.

The wool industry in western Pennsylvania was attended with the same fluctuations as elsewhere and for similar causes. In 1851 it was slightly on the decline, and in 1854 had not recovered. In Beaver County the fluctuations of price had discouraged growers, whose sheep were a cross with Saxon and Spanish, few if any common sheep being kept. In Allegheny every farmer had a small flock of sheep of some kind. The greater part of these were Spanish Merinos, though there were some full-blood Southdowns and Leicesters. Fayette County had long been the home of some fine sheep, both for mutton and wool; the Saxon and Spanish had been extensively bred, and, from time to time, various coarse-wooled sheep had been introduced, but the latter never rendered satisfaction. The Saxony sheep eventually ruined some of the fine flocks of the county, but by 1854 were about banished. They cost $1.50 a head a year and gave 2½ pounds of wool, which sold for 40 cents a pound, entailing a loss of 50 cents per head, but the Spanish Merino yielded from 4 to 12 pounds of wool and there was a good profit on a fleece.

From this time to 1862 the Spanish Merino was gradually extended and improved. The demand made by the war for coarse woolens caused some coarse-wooled sheep to be raised and some of them were substituted for the Merinos. This continued until the close of the war, when wool of all kinds was a drug on the market. Fine-wool sheep were being disposed of, but more began to cross their flocks with the long-wool sheep, the Cotswold rams being admitted into old Merino flocks where the Saxony and French had been excluded. It was suggested, and by some adopted, to preserve an unmixed stock of Merinos as the basis of operations when the tide turned in their favor, and at the same time derive present revenue from early lambs and coarse wool by crossing with long-wooled rams. This practice served as a foundation when the fine wool was again in demand and flocks again filled up and were multiplied from 1872 to 1882.

A noted flock of Fayette County, in the southwestern part of the State, was that of Gen. John S. Goe, of Brownsville. In 1846 he bought some Atwood Merinos from several of the old breeders of Spanish Merinos, as descended from the various importations. He annually purchased some Atwoods and a few other select animals, and constantly weeded out such as did not meet his expectations. In April, 1858, he purchased 6 Atwood ewes and a ram from the flock of R. J. Jones of the original divide of Edwin Hammond and R. P. Hall. In September, 1858, he purchased an Atwood ram and 4 ewe lambs of Mr. McKeever. In the following November he bought of Mr. McKeever 17 ewes, 12 of which were from Mr. Hammond's Atwoods, and 5 from Mr. Atwood's own flock, these being in lamb by his Hammond-Atwood ram.

Later in the month he purchased 9 select ewes from Mr. R. J. Jones' Atwood flock, and 6 ewes from Mr. Cutting's flock, and during the winter 7 Atwood ewes and a ram from other flocks. In 1859 and 1860 he added to his purchases 112 ewes and 4 rams from Atwood flocks, and 10 ewes and a ram from the flock of Mrs. Robinson. This was a noble flock, and he added to it by subsequent select purchases. The shearing record of this flock from 1853 to 1880 is highly instructive.

In 1853 Gen. Coe gave the weight of his fleeces from 40 ewes and rams as running from 4⅜ pounds washed wool to 24 pounds unwashed. From 2 rams he sheared 23 and 24 pounds unwashed fleeces; from 12 full-blood Spanish ewes 6, 6, 6, 6¼, 6½, 7, 7, 7½, 8, 8, 10, and 11 pounds of wool washed on the back of the sheep. In 1856 4 Spanish rams gave 6⅜, 6 7/16, 6 11/16, and 7⅛ pounds washed wool, and 14 ewes gave 4¼ to 6¾ pounds, the average being 5¼ pounds. In 1857 31 Spanish rams averaged 5⅞ pounds washed wool. In 1859 4 Spanish rams gave unwashed fleeces averaging 12⅛ pounds each, and 8 ewes 8 7/16 pounds each. Fifty Spanish ewes, well washed, gave an average of 5 1/16 pounds. In 1860 30 Spanish ewes averaged each 6 7/16 pounds washed wool. The lowest fleece was 5 pounds, and the heaviest 9¼ pounds. In 1861 5 Spanish Merino rams, unwashed, averaged 11 5/16 pounds each; 10 rams, washed, averaged 8 11/16 pounds, and 42 ewes averaged 5 11/16 each, washed wool. Passing a period of ten years and we have in May, 1871:

161 ewe fleeces, washed, weighing from	4 to 5 11/16 pounds.
51 ewe fleeces, washed, weighing from	6 to 7 11/16 pounds.
5 ewe fleeces, washed, weighing from	8 to 10 11/16 pounds.
2 ram fleeces, washed, weighing from	11 to 11¼ pounds.
2 ram fleeces, washed, weighing from	12 to 12 11/16 pounds.
3 ram fleeces, unwashed, weighing from	15 to 19 pounds.
19 ewe fleeces, unwashed, weighing from	8 to 11 11/16 pounds.
14 ewe fleeces, unwashed, weighing from	12 to 14¾ pounds.
7 ewe fleeces, unwashed, weighing from	15 to 18¼ pounds.

At the shearing of May, 1872:

1 ram fleece, unwashed, weighed	30¾ pounds.
1 ram fleece, unwashed, weighed	21½ pounds.
1 ram fleece, unwashed, weighed	21⅝ pounds.
1 ram fleece, washed, weighed	15 7/16 pounds.
1 ram fleece, washed, weighed	15¼ pounds.
1 ewe fleece, unwashed, weighed	23¾ pounds.
1 ewe fleece, unwashed, weighed	20 5/16 pounds.
9 ewe fleeces, unwashed, weighed	19 1/16 to 19¾ pounds.
5 ewe fleeces, unwashed, weighed	18 1/16 to 18 3/16 pounds.
45 ewe fleeces, unwashed, weighed	13 1/16 to 16¾ pounds.
68 ewe fleeces, unwashed, weighed	10 1/16 to 12 11/16 pounds.

The average weight of the unwashed fleeces of the 129 ewes was 13⅜ pounds. A comparison of 1871 and 1872 with 1860 and 1861 shows great increase in the weight of unwashed fleeces. The ram fleeces from an average of 11 5/16 pounds in 1861 went to 18 pounds in 1871 and 24½ pounds in 1872.

The shearing of 1873 gave:

1 ram fleece, unwashed	25 1/8 pounds.
1 ram fleece, unwashed	22 1/8 pounds.
1 ewe fleece, unwashed	21 1/16 pounds.
23 ewe fleeces, unwashed	19 1/16 to 20 3/16 pounds.
31 ewe fleeces, unwashed	16 1/16 to 18 1/2 pounds.
42 ewe fleeces, unwashed	11 1/16 to 15 1/2 pounds.

This record gives but 99 fleeces; 196 sheep were shorn. They were of all ages, mostly ungrown ewes and ewes suckling lambs, and the average was 13 pounds 4 1/2 ounces each.

In May, 1874, the shearing was as follows:

3-year-old ram gave	35 1/16 pounds unwashed wool.
3-year-old ram gave	21 3/4 pounds unwashed wool.
3-year-old ram gave	19 3/4 pounds unwashed wool.
5-year-old ram gave	19 pounds unwashed wool.
1-year-old ram gave	18 1/16 pounds unwashed wool.
2-year-old ewe gave	22 3/4 pounds unwashed wool.
2-year-old ewe gave	21 1/2 pounds unwashed wool.
2-year-old ewe gave	20 3/4 pounds unwashed wool.

Thirty-one two-year-old ewes were shorn in all, the lowest fleece weighing 14 5/16 pounds. The average of the 31 was 17 5/8 pounds. Seven ewe lambs, one year and under, sheared 14, 15, 15, 15 5/8, 16, 16 3/8, and 16 11/16 pounds.

At the shearing in May, 1875, the heaviest ram fleece weighed 32 1/2 pounds, 2 weighed 29 pounds, and 34 ran from 12 to 20 pounds. Eight ewes gave fleeces exceeding 20 pounds, the heaviest of which was 25 7/8 pounds. Fifty-three gave fleeces weighing from 12 to 16 pounds, and 27 from 17 to 19 15/16 pounds.

At the shearing in May, 1876, 12 ram fleeces averaged 21 1/8 pounds each. The heaviest was 31 pounds, the lightest 13 1/16 pounds. Fifty ewes averaged 16 1/2 pounds each, the heaviest being 27 and the lightest 12 3/16 pounds, all unwashed. The length of staple was noticeable, all but 1 ewe's being over 2 1/2 inches.

At the shearing of May, 1877, the heaviest fleece was that of a ram, and it weighed 32 pounds. Twenty-five rams and 109 ewes gave the following:

7 ram fleeces weighed	30 1/16 to 20 3/16 pounds.
18 ram fleeces weighed	19 1/2 to 15 pounds.
7 ewe fleeces weighed	28 to 20 pounds.
11 ewe fleeces weighed	20 to 15 pounds.
40 ewe fleeces weighed	15 to 13 pounds.
51 ewe fleeces weighed	13 to 12 pounds.

In May, 1878, the heaviest ram fleeces were 35 1/2, 32, 31 1/2, 30, and 27 pounds, the heaviest ewe fleeces 27, 26, 23 1/2, 21, 20 1/2, and 20 pounds.

In 1880 28 rams sheared from 35 1/2 down to 16 1/8 pounds, the average being 28 1/4 pounds each. Fifty-six ewes, mostly yearlings, sheared from 21 pounds down to 14, the average being 15 1/16 pounds each.

In 1853 Gen. Goe's heaviest ram's fleece was 24 pounds; in 1880 it was 35½ pounds, a gain in twenty-seven years of nearly 50 per cent. In 1859 his ewe fleeces, unwashed, averaged 8⅞ pounds each; in 1880 they averaged 15¹¹⁄₁₆ pounds, a gain in twenty-one years of 85.91 per cent.

This flock was a great colonizer. From it went pure-blood sheep into adjoining counties and States; many of the best sheep in Ohio and Wisconsin trace their origin to it, and in 1876 two lots were sold to go to Australia, 10 rams and 25 ewes. Gen. Goe took a great interest in his sheep and in sheep husbandry; was a frequent contributor to the agricultural press, and persistent in setting forth the value of sheep both for the flesh and wool they gave and as renovators of worn-out lands.

But the most noted locality for fine wool-growing in western Pennsylvania is the county of Washington, in the southwestern corner of the State. The Rev. Colin McFarquhar, a Scotch minister, who settled in Lancaster County in 1776, visited Washington County in the beginning of the present century, when there was no wheel-road across the Allegheny Mountains, and when all transportation was done by pack horses. He often spoke of the hills as reminding him of his own Scottish land and of the goodness of a kind Providence in placing these hills in just the place for fine wools, saying that the flat lands of the east were not suitable. He often remarked to Mr. Alexander Reed, "I'll ne'er live to see it; you may ne'er live to see it; but your children will live to see these hills white with sheep." At that time it looked as if this prophecy would only be fulfilled in the most remote future, if at all; the country was then a dense forest, with more wolves and other wild animals than sheep. As a reason for his faith he said, "Your wheat and your flour will not bear the cost of transportation; 200 pounds of flour, worth perhaps $5 or $6, will cost as much for transportation as 200 pounds of wool, worth $100." Mr. Reed lived to see the prophecy fulfilled, and to see millions of pounds of wool and thousands of fat sheep sent every year to the Eastern markets.

In 1880 Washington County had more than one-fourth of the sheep, and raised more than one-fourth of all the wool grown in the State. This county, with the adjoining counties of Greene and Allegheny in the same State, and of Hancock, Brooke, Ohio, and Marshall in the "Panhandle" of West Virginia, is justly celebrated as one of the best wool-producing districts of the United States, and as the special home of some of the finest types of the Merino sheep. The tenacious limestone loam of the valleys, very productive in grasses of all kinds, the hillsides covered with blue grass to their very summits, the best of water, and a climate not excelled anywhere, have favored the production of a class of wool that for excellence for manufacturing purposes has no superior in the country. For over fifty years this section of country has been the nursery whence many of the fine-wooled sheep now grazing western fields were propagated, and many as fine flocks as can be found in the

world still thrive on the steep and rugged but dry hills. In the territory here indicated there are nearly or quite 800,000 head of these fine-wooled sheep, and many of the other millions of sheep in different sections, from Ohio southwest to Texas and west to Oregon, can trace their origin to this same territory.

The hardy pioneer who more than a century ago settled in the western country had a little flock of common sheep with which to clothe his family with homemade linsey-woolseys. The wool was shorn, scoured, picked, carded, spun, and woven by the females of the family, and tariff discussions did not disturb nor alarm them. This system of domestic manufacture continued for many years and was not broken in upon until about 1810, when Merino sheep and carding-mills began to appear in such number as to attract attention. The introduction of the Merino was gradual. John C. McNary, in a recent address, says:

> The farmers discussed the propriety of buying and breeding the Merino as men do to-day the Holstein and Jersey, or the Clyde. Many clung to the old common, long-legged fellow that had furnished the clothing they wore and their fathers before them. Others, more conservative perhaps, kept both, at least as many coarse sheep as would make the stockings and blankets for the family. After the introduction of the Merino in Washington County and their value to the farmers began to be fully realized they became the staple product, and it is safe to say that in all the ups and downs in price and demand for sheep and wool since then the farmer who persistently and judiciously stuck to the Merino is the one who prospered and became wealthy.

As early as June, 1810, James Kelly, of Ten Mile Run, Washington County, said that there were many Merinos owned by Col. Crooks and Absalom Hawkins, who had introduced them at considerable expense, and that the number of half and quarter bloods was large, producing good wool, which he was then making up into good cloth. Washington County had then 47,294 sheep. The flocks of Col. Crooks and Mr. Hawkins were founded by purchases from the son of Col. David Humphreys, and the Hawkins family, almost without exception, have been prominent wool-growers ever since.

In 1810 Joseph Clark purchased a few fine-wooled sheep, the first clip of which was sold for $2 per pound. But the dogs and wild animals gave him so much trouble and destroyed such a large number of them that he sold what remained at the rates paid for native sheep.

In 1811 a son of Col. Humphreys visited Washington County with a flock of his father's Merinos. He sold a few of mixed blood and rented out h is fine rams, one of them to Daniel Leet and his neighbor, James Gilmore, to be paid for at the rate of $4 for each lamb received. A German, Baron Bassey, of Bessenheim, Butler County, Pa., brought a few sheep to Washington Village about the same time, as did also a Mr. Baldwin, of Fayette County. Bassey's sheep, 7 in number, were kept for some time in the cellar of the village tavern. Messrs. William and John Hoge, who were the original proprietors of the town of Washington, also had a small flock from Bassey's and Baldwin's stock.

In 1812 Nathaniel P. Atkinson and William F. Peterson bought at

Washington, D. C., 52 Spanish Merino sheep for $1,850, and took them to Washington County. They stopped with Mr. James Clokey, of North Strabane Township, and rented part of the adjoining Pentecost farm, where they remained four or five years. Many of the early wool-growers, Mr James Clokey, James Moore, and others, started their flocks at this time from the Atkinson stock. Mr. Atkinson subsequently drove his flock to Stark County, Ohio, but found the flat lands of Ohio not suitable for sheep, and removed thence to the vicinity of Wheeling, W. Va., taking the sheep with him. Living not far from the Steubenville factory, which made a discrimination in favor of fine wool, Mr. Atkinson was subsequently induced to change his flock from Spanish Merino to Saxony, and found the latter more profitable. He afterwards admitted the Spanish Merino into his flock, and in 1864 had 3 Silesian rams. He bred the flock until his death, about 1868. It was then one of the best flocks in that section of the country.

One of the first to engage in the business of fine-wool growing was Gen. Thomas Patterson, well known as a representative in Congress from the District from 1816 to 1824. In 1813 he purchased from Mr. Rapp a Merino ram for $100, and in 1815 and 1816 he bought from Wells & Dickinson's flock 1 ram and 7 ewes at $100 each. From this beginning many of the most successful wool-growers of the county started their flocks, among whom were Samuel Patterson, Maj. McFarland, Joseph Brownlee, Samuel Cunningham, Hugh Lee, William and Samuel Cowan, and Col. James Lee.

Other enterprising persons commenced the business of wool-growing and made much improvement in their flocks, but the greatest incentive to fine-wool growing was the establishment at Steubenville, Ohio, of the woolen factory of Wells & Dickinson. These gentlemen had large flocks of Merino sheep, from which they sold the foundation of many flocks in the western part of Pennsylvania, Virginia, and eastern Ohio. Among the purchasers from Washington County were Mr. Ewing, who bought 600 sheep at $5 each, Mr. James Strean, William Brounlee, Alexander Reed, and Joseph Clark. Mr. Strean bought 5, for which he paid $500.

The Steubenville Woolen Company was organized in 1814 and continued in operation for many years, commencing the manufacture of fine wool in 1815 from the Merino sheep introduced into the State of Ohio by Seth Adams, W. R. Dickinson, and others. Some of the superfine cloths made at this establishment were sent to Philadelphia and Baltimore and sold at prices lower than imported British cloth, to which it was not inferior. It was quite an ordinary circumstance for those who had fine wool in Maryland and Virginia to send it across the mountains to this factory, where it was manufactured into cloth and returned to the owners.

Prominent among breeders of fine-wool sheep was Jesse Edington, of Hollidays Cove, W. Va. He commenced sheep breeding in 1821,

with 200 ewes, descended from the Humphreys importation. He subsequently added to the flock by purchases of sheep from Wells & Dickinson, and used many rams from that stock, thus forming the basis of what he considered a pure Dickinson sheep, which he bred pure for many years. He had an average flock of 3,000, and from it was formed the nucleus of many flocks in his own section and in Ohio, and some parts of Indiana. He kept his sheep in flocks of about 200 each, and fed them on hay and corn. Five tons of hay and 50 bushels of corn to the hundred sheep was the usual allowance. He housed his sheep from the winter rains and from extreme cold weather, exposing them only for the purpose of obtaining water. He raised about 75 lambs to 100 ewes, and the fleece of the flock did not average more than 2½ pounds per head in 1845, which increased, however, to 4½ pounds in 1865.

In the fall of 1822 Talbot Hammond, of Brooke County, W. Va., purchased 7 ewes and a ram of his brother, Charles Hammond, of Belmont County, Ohio. These sheep were bred directly from the flocks of Wells & Dickinson, of Steubenville. The ram was an imported one, for which Mr. Dickinson had been paid $80, and was quite old at the time of Mr. Hammond's purchase. Mr. Hammond subsequently crossed his sheep with Saxony rams from Dutchess County, N. Y., but the result was not favorable, the average clip being only 2¾ to 3 pounds per head. He continued to breed the Saxon for some years. He sheltered all his sheep in the winter season, believing that no animals needed it more, as the sudden changes of weather during the winter months were very trying to them. He fed corn and sheaf oats. The flock was strongly Saxon until after 1860, when Vermont Merinos were crossed upon it and, subsequently, the Silesians, which were introduced into that section of country in 1860 and 1861.

About 1820–'22 William Brownlee, John H. Ewing, Mr. Miller, Mr. Tannehill, and hundreds of others began wool-growing. William Davis and John McDowell afterwards took the Brownlee stock, and neither of them suffered the sheep to deteriorate on their hands, and their wool has always been regarded as among the fancy clips and commanded the highest prices. James Strean had some of the same stock and he took the medal at the World's Fair in London in 1851 for the best fine wool, For many years his flock held its place as one of the finest in the country. When ordinary wools were selling at 25 to 30 cents his wool sold at Lowell, Mass., for $1 per pound.

In 1821 William Berry purchased one choice ram and a small number of ewes from the flock of W. R. Dickinson, and placed them on his farm in Cecil Township, Washington County, where he undertook the raising of a flock. These sheep were represented when purchased as pure-blooded descendants of the Humphreys importation, and Mr. Berry was cautioned against crossing and mixing the blood. His sheep were cultivated with great care and were not contaminated by any infusion of the Saxon blood, subsequently so fatal to many fine flocks of this

section, and in time developed into the well-known Black-Top Spanish Merino, so called in reference to their dark coats in contrast with the lighter-colored Saxons and their progeny. The flock was bred in families at first, and afterwards crossed from one family to another; and in that way the evils of direct continuous in-and-in breeding were avoided. At the time this flock was formed, throughout the greater portion of the country the attention of breeders was principally given to wool culture; but by reason of a fancy for large sheep, as well as the growing demand for mutton in his neighborhood, Mr. Berry endeavored to produce a larger sheep, and to that end gave much of his attention, determined, if possible, to secure a good mutton sheep that would retain all the excellencies of the fine-wooled Merino. By careful and judicious selection, with a view to strong, healthy body, hardy constitution, and active animal vigor, he not only increased the size of his Merinos but added to the quantity and quality of their wool, and as the result of his years of care and patient labor he had the satisfaction of securing a sheep fully up to his ideas of size, of strong, healthy, well-rounded and compact body, which possessed superior qualities as a mutton producer, and bore a heavy fleece of the finest delaine wool. During his experiments Mr. Berry found that the darker sheep were the larger, and made the best records as breeders and wool producers. This was especially noticeable in the rams. It was also observed that the darker sheep had the hardiest constitutions and greatest animal vigor, were less affected by the severe changes of the climate, and could endure the winters and rough weather much better than those of a lighter color.

This flock was bred by Mr. Berry until in 1847 it numbered about 500, when it was equally divided between his two sons, and the one-half going to Matthew Berry still survives at Houstonville, Pa. Regarding these sheep it is said they have never been closely housed or protected from summer rains, but have received only good care throughout the season. The aim was, and still is, to produce a sheep with a fine, long staple of nice, white wool; of good style and covering the sheep quite well, but not so low down on the legs as some other families of Merinos. It is not claimed by the breeders that this is a new family or breed of sheep, but on the other hand that it is the oldest pure-bred family in the country of its adoption. It is, however, given a separate class, and thus recognized as a distinct family, and the Black-Top Spanish Merino has a Register, and its breeders have adopted a standard by which it shall be judged.

Standard or scale of points of the Black-Top Spanish Merino.

	Points.		Points.
Constitution	15	Covering	8
Size	12	Quality of fleece	7
General appearance	3	Density of fleece	7
Body	15	Length of staple	8
Head	5	Oil	6
Neck	4		
Legs and feet	10	Perfection	100

In connection with this standard the blood must be pure from the importation of Merino sheep by Col. Humphreys, as bred by William R. Dickinson, with a constitution as indicated by physical development; deep and large in the breast and through the heart, broad back, very heavy square quarters, skin of fine texture and pinkish in color, expansive nostrils, brilliant eye, healthful countenance, and good feeders. As to size when in good condition, with fleece of five months' growth, full-grown rams should weigh not less than 175 pounds, and ewes not less than 125 pounds. In general appearance the head should be carried well up, and the sheep stand squarely on feet and legs; the body should be well rounded, showing in all points symmetry of form; heavy boned throughout and well proportioned in length; smooth joints, ribs starting horizontally from the backbone and well around to breast-bone; breast-bone wide, strong and prominent in front; strong, straight, and heavy back bone; heavy, muscular quarters; shoulders broad and flat, muscles firm and heavy, and body entirely free from folds. There may be a slight throatiness, and a small dewlap—smaller on the ewes than on the rams. The head should be wide, with clear, bright eyes and prominent ears. Ewes should give no appearance of horns, while upon the rams the horns should be well developed, clear in color, and symmetrically curved. The neck should be very heavy, especially with the rams, deepening towards the shoulder; legs medium in length, set well apart, with well-shaped, medium-sized feet; the body and legs to the knees covered with medium or fine wool, extending well forward between the eyes. Fleece should be compact, but should open freely, showing a length (at twelve months' growth) of not less than 3 inches, and the oil must be white, flowing free from skin to surface, and form on the exterior a uniform dark coating.

The part of the original William Berry flock which, in the division of 1847, fell to the son of William Berry, was further divided. In 1851 45 ewes and 1 ram were sold to John Berry, another brother, of Cecil Township, Washington County. John Berry added to the flock a yearling ram bred by William Berry. In 1858 he purchased of John Gallaher, of Fayette County, a yearling ram said to have been sired by a full-blooded Vermont Merino ram out of a Black-Top Merino ewe. This ram was used on part of the flock, but the progeny was not satisfactory, partaking more of the qualities of the Saxony Merino, having a light top and light fleece. Other tests of crosses with Vermont rams were made, but not to his satisfaction. While they give weight to the fleece and in some instances longer wool, they lacked top, and the wool had not the clear white bottom that the pure bred Black-Top had. The cross-bred sheep were rejected as being inferior to his own stock, and he bred rams on his flock from that of his brother, Matthew Berry. In 1867 the flock was sold to his two sons, J. M. and C. M. Berry.

Previous to this sale, however, another brother, William Berry, purchased of his father in October, 1863, 55 ewes, which laid the founda-

tion of a flock which was added to by subsequent purchases from his brothers and others of choice Black-Top sheep. In breeding his sheep it was the aim to produce a large, well-formed animal, with a dense fleece of long white wool, carrying the oil well to the surface and avoiding the sacrifice of the natural fineness of fleece for any other point. He especially endeavored to improve their feet, his constant aim in that direction being to propagate a Merino sheep with feet equal to those of the mutton breeds. Two noted stock rams of this flock were Success and Walter.

The flock of John Berry, purchased by his sons C. M. and John M. Berry, April 1, 1867, contained about 265 head. These were kept together and bred as one flock, using only the rams from the original purchase, or those bred from the original purchase, up to April 1, 1872, when the flock was divided equally between the two brothers, C. M. Berry taking his part to his farm in Strabane Township, while John M. Berry retained his on the homestead farm. The course of breeding followed by the two brothers was similar. They always reserved the best sheep of both sexes for their own breeding, and never allowed selections from their flocks. They avoided extremes on any one point, aiming to propagate the sheep that would make the highest average on all points. They believed that the most valuable sheep was the one that would give the greatest return in dollars and cents in a given time from both wool and mutton, and to this end they aimed to breed sheep that would produce the greatest number of pounds of clean, fine delaine wool on the largest and best mutton carcass. Each flock did the greatest amount of breeding within itself, but close in-and-in breeding was avoided by the use of rams bred in other pure-bred Black-Top flocks, besides using rams at different times from each flock, one on the other. The wool from these flocks grades very high, that of John M. Berry in 1884 marking 100 per cent fine delaine.

The sheep from the original William Berry flock had a wide dissemination in Washington County before their excellence was generally recognized, but unfortunately many were crossed with inferior Vermont and Saxon rams and their characteristic points eliminated. One of the purchasers from Matthew Berry was Tappan W. Wylie, who in turn sold some of his sheep to Thomas N. Ralston. In the early days of wool-growing in Washington County John Ralston, who possessed a large tract of land especially adapted to the business, began sheep raising, increasing his flocks from time to time until they numbered from 1,000 to 1,400. His first object was wool-growing, and his flocks were composed of the best breeds of fine wool sheep, not confining himself to any particular breed, but always striving for the best wool producers. In 1860 his son, Thomas N. Ralston, assumed charge of the sheep, and in 1866, desiring to improve and increase his flock, took a trip through Washington County and was attracted by the peculiar, dark colored, large sized sheep owned by Mr. Wylie. Upon examination of them

HAINES, DEL.

MERINO RAM "SUCCESS."

FROM "BLACK TOP SPANISH MERINO SHEEP BREEDERS' REGISTER."

HAMER, DEL.

MERINO RAM "WALTER," No. 191.

FROM "BLACK TOP SPANISH MERINO REGISTER," VOL. I, 1868.

HAINES, DEL.

Sachse & Wichelns Litho. Co. New York

MERINO EWE "MADAM," No. 1102.

FROM "BLACK TOP REGISTER," VOL. I, 1885.

he discovered that they were covered with a very heavy coat of long and unusually fine wool, and he purchased 20 of them. During that and the two years succeeding he purchased quite a number of sheep from prominent breeders of Vermont and New York, but found that his sheep purchased in Washington County were superior in many respects, such as their feet, wool, and carcass. In 1876 he purchased 15 descendants of the Wylie flock, and in 1879 2 rams and 6 ewes of the Berry flock, represented as pure-blood descendants of the Dickinson sheep. They were from the Humphreys importation of 1802. The Ralston flock is owned in Armstrong County, Pa.

In 1821 Alexander Reed, of Washington County, was the possessor of some farms that were not paying him 3 per cent interest on their cost, so he was driven into sheep husbandry and bought sheep to make up flocks. The average cost of his flock was $4.55 per head. The highest price paid was $25, the lowest $2.50, and among the purchases was a flock of 134 full-blood Merinos from Alexander Wilson, near Philadelphia. They were superior in smallness of bone and form to any Merino that Mr. Reed had seen. In form they were but little inferior to the Dishley. Many of the wethers, bred in 1824, weighed from 110 to 120 pounds on foot, and this without any extra feeding. Mr. Reed increased his flock to about 3,000 and was a very successful wool-grower, and is believed to have been the first to test the Eastern market with Washington County wool. The failure of the Steubenville factory in 1829, and the cessation of manufacture by Mr. Rapp's colony at Economy, Butler County, ruined the home market, and the Washington County wool followed the market opened by Mr. Reed, and has ever since done so.

Collin M. Reed, sr., in a paper on the history of fine-wool growing in Washington County, says:

> In 1819 the late Alexander Reed, of Washington, father of the writer, brought from Philadelphia a flock of 134 Spanish Merinos, and soon after the celebrated flock of Richard W. Meade (father of the late Gen. George G. Meade), our then consul in Spain. The flocks of pure blood, good size and form, greatly improved the stock of Washington County.

The Victor-Beall Delaine Merino Register fixes the importation of these sheep at about the year 1820, and says they were kept for some time on the farm of Alexander Wilson, near Philadelphia.

> They did not do well there, and were subsequently sent to Washington County. A part of them were placed on the farm of Alexander Reed, near the town of Washington, and the rest on the farm of Wilson Cunningham. These two flocks were among the pioneer Merino flocks of Washington County, and from them sprung very many of the fine-wool flocks that afterwards gave to Washington County the popularity it has long enjoyed as the banner fine-wool growing county.

There is an evident mistake in the date assigned by Mr. C. M. Reed to the purchase of the 134 Spanish Merinos at Philadelphia, for Alexander Reed in March, 1824, fixed that date at 1821 and not 1819, and the Delaine Register in fixing the importation at about 1820, and then

stating that they were kept some time on the farm of Mr. Wilson, would seem to invalidate both the statement of Alexander Reed and C. M. Reed. Alexander Reed, March 20, 1824, says: "It is not quite three years since I commenced sheep husbandry," and continues the statement by noting the purchase of "a flock of 134 full-bloods from Mr. Wilson, near Philadelphia." The date as indicated by Mr. Alexander Reed is undoubtedly correct, and there is but little doubt that these Spanish Merinos were not imported in 1820, but in 1810 and 1811, and were part of the Infantado flock or flocks in charge of David Rose, W. J. Miller, and others from 1810 to 1823, belonging to R. W. Meade, and of which mention has been made on a preceding page.

The introduction of the Meade importation laid, in part, the foundation of the Delaine Merino sheep through the flocks of George Murray, William Brownlee, George Craighead, Ebenezer McClelland, and John McNary. George Murray, George Craighead, and Ebenezer McClelland bought of Alexander Reed the sheep that were the foundation of their flocks. These were small and well fed, and being always fat, soon developed into large black-topped and heavy-shearing sheep, and were spoken of as the Big Merinos. At first these sheep were of medium size, with a fleece weighing about 2½ pounds, and of very fine staple.

In 1824, at the request of J. Hare Powell, of Philadelphia, Mr. Alexander Reed gave some facts concerning his flock and its management, which, before proceeding to the branches from it, we condense. From his own observation and information from more experienced sheep farmers he was fully convinced that the half and three-fourths blood Merinos would produce more good mutton in proportion to the food than the common sheep of the country. Their small bone and compact form gave them a decided advantage. With the western growers the weight and fineness of fleece were the only objects. His belief was that in situations where mutton commanded a good price, taking in view the amount of capital required, from half to three-fourths bred would prove as profitable as any other kind. By a little care in selecting good-sized Merino rams and large well-formed common ewes, a race would be produced combining, in a great degree, valuable wool and heavy carcasses. The fact was unquestioned that such a cross produced more wool than the unmixed on either side. That they were more active and stronger than the common sheep was also a fact well known to all who had been in the habit of handling them, and in washing them it required nearly double the strength to manage them in the water.

The management of the sheep was similar throughout the county. Pasture ground was so arranged as to take a piece of woodland into every field to shade them from the sun. This was considered essential to their health and comfort, particularly after shearing. Four to 6 sheep were kept on an acre and frequent changes made from field to field when practicable. During the winter the feed was almost entirely a

mixture of clover and timothy hay, with about 8 pounds of salt on every ton. Five tons for a hundred sheep was a fair allowance where some provision had been made for winter pasture. In this way they obtained a mixture of succulent and dry food, which conduced to good health. The wethers required no grain. About three or four weeks before lambing time heavy ewes were fed with a little oats in the straw or thrashed, and a little grain was given during the winter to the last year's lambs. When grain was cheap an increased quantity of wool paid for extra-good keeping. Some successful sheep farmers fed their flocks almost entirely on oat straw. The oats were cut before they became ripe—were exposed to but little sun and no rain. Chopped rye about yeaning time greatly increased the quantity of milk. Sowing a field of early rye as spring pasture for old sheep was a paying practice. From the low price of mutton and the anxiety to increase the fine-wooled sheep they were never fattened for the butcher. Sheds were considered indispensable, especially for breeding ewes and lambs. It was generally believed that early lambs made the hardiest sheep, but experience did not always confirm this opinion. Rams were not permitted to remain more than about one month with the ewes. Those who desired early lambs bred from strong ewes, as old and weak ones could not support their lambs through the winter months without more trouble than they were worth. In large flocks it was almost impossible, and most farmers soon gave up the practice of having early lambs. No ewes under 18 months old were permitted to remain with the rams; to extend the time to 2½ years was thought to be more profitable in the end and was sometimes practiced. Although in the latter case the flocks did not increase so fast, compensation was gained in the improved size and quality of the stock. Diseases were rare; old age and the dogs were the only foes dreaded.

The excellent care vouchsafed the sheep, the strong healthy stock from which they sprung, the climate and fine herbage, all combined to produce a large sheep with fine wool, such as have been the glory of Washington County, and which have enriched it beyond that of any similar section of the United States. In 1824 more than 10,000 sheep were sent from this county to found flocks in Ohio. In 1825 there were 110,451 sheep in the county shearing over 400,000 pounds of wool. Between one-third and one-fourth of the wool was Merino of different grades from full down to quarter-bred. About three-fourths of the whole was manufactured in a domestic way into narrow cloths, blankets, linseys, flannels, and stockings. Considerable linsey was sent down the Ohio. Wells & Co., at Steubenville, consumed one-third of the remaining 100,000 pounds, the small manufacturing establishments one-third, and the remainder, or about 33,000 pounds, was sent eastward. In 1836 there were 225,000 sheep, shearing over 600,000 pounds of the finest wool. One-eighth of the number raised in the entire State were in Washington County, and this with Fayette, Beaver, and Allegheny

furnished nearly all the fine wool that was grown, the location being favorable, the land well cleared, and the pastures clean, hilly, and healthy.

In 1822 John McNary, of North Strabane Township, bought of W. R. Dickinson 1 ram and 20 ewes, selected from a flock then on their way from the East to Mr. Dickinson's farm in Ohio. These were the first Merino sheep introduced into that neighborhood. They were good sized and healthy, with very fine wool, and were bred by Mr. McNary with great care. As the flock increased other rams were used from the flock of William Brownlee, which were descendants of the Dickinson stock, and afterwards from the flock of George Murray, of the Meade importation. In 1828 the flock was divided, part of it passing to W. H. McNary, and the remainder to James S. McNary. The latter added to his flock selections from those of George Murray, William Brownlee, and William Davis, all being descendants of the Meade importation, through the Alexander Reed flock. No other blood was introduced until 1860, when a Spanish Merino ram was used, having been selected with reference to fineness and length of wool. In 1870 another Spanish ram was selected from the flock of J. M. Miller, and another from the Black-Top flock of J. M. Berry. But the principal part of all breeding done outside the flock has been from the flocks of R. H. Russell and John C. McNary.

William H. McNary, who, in the division of John McNary's flock, received part of it, added to it the same year 20 ewes and a ram from the flock of George Murray, his father-in-law, these being direct descendants from the Meade importation. W. H. McNary was an excellent shepherd, and when it was first proposed to introduce the Vermont Merinos looked with much disfavor upon them, preferring the old smooth-bodied, black-topped, and fine-wooled sheep. To a certain extent, however, he yielded. In 1860, from this flock of 300 sheep, J. C. McNary selected 50 ewes for the foundation of a new flock. To 20 of these ewes he bred a Vermont ram of oily wool and large frame, the other 30 ewes being bred to a long-wooled ram. The cross with the Vermont ram was satisfactory, especially as the war so stimulated the wool trade that coarse and fine wool brought the same price, making weight more necessary to profit than fineness of quality.

The union of the Dickinson and Meade sheep in the flock of John McNary was the first step leading to the formation of the comparatively new Delaine Merino. It is claimed by the breeders of this sheep that no deep interbreeding has been practiced, and that the sheep are, therefore, free from all taint of weakness so frequently traced to incestuous breeding. No pretense is made of line-pure descent from a single sheep or a single flock, but on the contrary the breeders pride themselves in having secured in combination the blood of the best flocks in America and Spain, but at the bottom of which is the R. W. Meade importation.

About 1827 Ebenezer McClelland purchased of Alexander Reed, of

Washington, Pa., a lot of fine-wool sheep, descendants of the Meade importation. They were of medium size, with a fleece weighing about 2½ pounds, but the staple was very fine. About 1830 he purchased a lot of fine-wool sheep of George Murray, being also descendants of the Meade importation. These sheep were medium size with fine staple. About 1840 he purchased of James and Thomas Ralston their entire flock, which they called the Dickinson stock, having a weight of fleece of about 3 pounds. In 1844 or 1845 he purchased of Mr. Edington two rams, which were of medium size, with a long, fine staple, but thin on the sheep, and weighed about 5 pounds. The introduction of these rams into the flock increased the weight of fleeces to about 3 pounds, which was of very fine quality of long, white wool. The flock was then bred in line until about 1857, when Mr. McClelland's sons, who had succeeded to the possession, purchased of Rockwell & Jones, of Vermont, two Spanish rams of good size, smooth body, with a good dewlap and a white fleece, weighing about 10 pounds each. This cross made quite an improvement in the flock, and brought the weight of fleece to 4 pounds, with a good form of sheep. In 1858 a ram was introduced from the Henry S. Randall stock, of New York. This Spanish ram was large, with smooth body, a heavy neck, and a fleece of long, white wool, weighing about 12 pounds. This cross produced very satisfactory results, increasing the weight of fleece to about 5 pounds, with a good form of sheep, such as is needed to make good feeding wethers. In 1862 a yearling ram was purchased of C. H. Beall, of Brooke County, W. Va., claimed as the corner stone in the foundation of the present flock of the McClelland Brothers. He sheared about 17 pounds of long, white, exceedingly stylish, crimpy wool. He was a cross from a Spanish and Black-Top. In 1867 a ram belonging to C. H. Beall was used. He was a large, well-formed sheep, with smooth body, and good, heavy dewlap, and with fleece at maturity weighing 18 pounds. In 1867 a Spanish ram belonging to Robert Perrine, of Patterson's Mills, Pa., was used; fleece weighing 20 pounds. In 1872 one of William Thompson's stock rams was purchased. He was strong Spanish, with a fleece weighing 18 pounds. In 1879 the well-known stock ram Success was used. This ram had been exhibited many times, and was nearly always a winner. The results of these crosses were very satisfactory. Of this flock, consisting in 1882 of 1,700 sheep, 74 ewes were admitted to the Delaine Register, at the head of which stands the stock ram, Old John No. 1, sired by the old Beall ram, whose name forms, in part, the designation Victor-Beall Delaine Merino.*

All the breeding of this flock was with the view to a large, bulky white fleece of wool, and at the same time being careful not to lose sight of good feeding wethers, such as were produced from this flock and sold in 1882. One hundred 3-year-old wethers, after shearing 11 pounds of

* Victor-Beall Delaine Merino Register.

white Delaine wool, had a carcass averaging 110½ pounds. The fleece of Old John, No. 1, weighed 17 pounds.

At the sale of the Dickinson flock in 1829, John H. Ewing bought 1,000 head, which was the foundation of his flock. They were originally from the best imported stock and he gave the greatest care and attention to their improvement for many years, making such selections for breeding as would produce wool desirable to the manufacturer and at the same time profitable to the wool-grower. And in the selection of breeders, the peculiar character of the stock being carried down for generations, he chose always the best rams, allowing 3 to every 100 ewes. In the summer Mr. Ewing grazed his flock on the mountains, covered with timber and underbrush, and whenever they had sufficient scope they did well and were healthy. A variety of herbage and frequent change of pasture are necessities to the sheep. The foddering season lasted five to six months, but not more than three or four weeks of bad weather, during which time the sheep were fed on hay, oats, corn, and corn fodder. They were given what hay they would eat up clean, and the ewes and weaker ones were provided with a bushel of oats per 100 daily, or half that quantity of corn; in bad weather it was found best to fodder three times a day. The less grain, however, they had the better, as long as they remained in good order, which alone could be done by the use of roots or an extensive range, which was permitted to grow up during the summer, and a blue-grass range was the best, as it is less liable to be affected with frost than any other, and one of the best for pasturage. Mr. Ewing's flock in 1845 exceeded 2,000 and then partook more of the Saxon than Spanish Merino character, as well as most of the flocks in his section of country, and yet most of the original stock was of Merino blood. But many of the flock had been formed by crossing with the native sheep, and by close attention for a series of years had become very good, and generally passed for full-blood Merino.

About the year 1830 George Craighead started a flock of sheep, getting part of his stock from George Murray, Black-Top Merino, and getting stock rams at different times for a number of years from the same flock. He afterwards purchased a ram from Samuel Kerr, and subsequently 2 rams from William Moore. In 1850 the greater part of the flock passed into the hands of the present owners, W. R. Craighead & Son. A change was again made; a stock ram of the old Black-Top stock was bought of James McConnell. In 1863 a thoroughbred Spanish ram was purchased of Mr. Dunaway, of Fayette County, Pa., bred from stock that he had brought from Vermont. This improved the flock very much in every way. In 1868 a full-blood Spanish ram from the flock of Robert Perrine was used. He had long, white, and very fine wool. In 1871 a thoroughbred Spanish ram was purchased of William Thompson, producing a good cross. From 1874 to 1877 the ewes were bred to rams from the flock of the Beall stock, owned by the McClel-

Bonbright & Wilhelmy Litho Co New York

HAINES, DEL.

MERINO EWE "EMMA," No. 31.

FROM "DICKINSON MERINO SHEEP REGISTER," VOL. I, 1884.

land Brothers, producing a great improvement in length of staple and form of sheep. In 1878 a ram from the flock of John B. Craighead was introduced, being a cross of the Spanish and Black-Top, which added to the size of sheep and whiteness of fleece. In 1879 and 1880 two rams from the old Black-Top flock of Robert Johnson were added. Of 150 ewes from all these crosses only 14 were admitted to registry by the examining committee when the Delaine Merino Registry was organized in 1882. At the head of the flock stook Black-Top II, 1 year old, with a 14-pound fleece.*

A brief sketch of a few leading flocks that have come down to the present day gives but an imperfect idea of the early sheep of this section of country as raised by the ordinary farmer and wool-grower. Founded upon the early importations of Humphreys, Jarvis, R. W. Meade, and others, but principally upon what was known as the Wells and Dickinson sheep, there were at an early day many varieties formed by crosses on the common sheep of the country, the cross of the Meade sheep upon the Dickinson, and crosses in every direction. The grower was not particular as to the name or pedigree of the sheep, provided it displayed a good fleece and had a good constitution. Looking to these two requisites the early Merinos attained great excellence and yielded a fine wool. The wool industry was in a prosperous condition from the time it became an industry until 1820. During the war with England wool brought high prices, and the Wells and Dickinson woolen mills at Steubenville afforded a market. The disaster that overtook the manufacturer in 1815 at the East did not so seriously affect the wool-grower at the West, for he found a factory that did not immediately succumb to the general depression, and he could dispose of his wool at prices that were fairly remunerative if not highly profitable. He did not abandon his flocks, nor did he seriously neglect them. New settlers bought sheep and there was a steady increase. The tariff of 1824 gave a stimulus to the industry, which was further increased by the tariff of 1828. Wells and Dickinson, who had large flocks of sheep, encouraged the growth of a very fine wool, and from 1827 until the suspension of their factory in 1829 brought many Saxony Merinos into the country which they added to their own large flocks and sold to the neighboring growers. Others bought Saxonies in Massachusetts, Connecticut, and New York, and nearly all the fine flocks of western Pennsylvania, West Virginia, and southeastern Ohio were crossed with them, and they were bred in that direction for many years, during which period the wools of the section were acknowledged to be the finest grown in the United States and not excelled in Germany.

The Steubenville factory, after sinking over $200,000, was obliged to close in 1829, and the home market was lost. Wool ran down in price, the flocks diminished rapidly in numbers and quality, and the character of the wool has not been equaled since. At this crisis full-blood

* Victor-Beall Delaine Merino Register.

Merino sheep sold as low as $1 per head with the fleece on, and 300 full-blooded Merino wethers of Mr. Alexander Reed's flock were disposed of at 87½ cents each, scarcity of pasture making it necessary to reduce the flock.

In West Virginia, at this time, there were flocks of as fine Saxony sheep as Saxony or Silesia could show, and some of these flocks were maintained to 1883, when most of them suffered deterioration. Some still exist and shall be noticed elsewhere.

The development of the fine-wool industry of this section was wonderful. Washington County increased its sheep from 47,294 in 1810 to over 100,000 in 1825, and over 200,000 in 1836, of the finest breeds, producing each on an average 2¾ pounds of wool. Year by year the Saxon blood increased in the flocks and nothing else was sought for until about 1847, when breeders and growers awakened to the fact that generally the Saxons lacked constitution and hardiness. They were a fine-boned, well-formed sheep, and gave an average fleece of 2.76 pounds, and the wool was of the most desirable character, fine in fiber and fair length of staple, and nearly free from yolk or oil. But this fineness of fleece did not command the price that would make it more profitable than the heavier Spanish fleece at a lower figure. The Spanish Merinos were more hardy and a cross on the Saxons enhanced the weight of the sheep as well as the fleece. It was a great era for fine-wool growing and many had purchased more sheep than they could properly attend to, which was an additional reason why the animals became weak, the yield of wool light, and the constitution of the sheep greatly impaired. The crossing of Spanish rams on Saxon ewes soon effected a discernible improvement, not only in the quality of wool, but in weight of fleece and constitution of the sheep. From 2¾ pounds per head in 1847 the wool rose to over 3 pounds in 1856, to 3.17 in 1860, and to 4.36 pounds in 1870. A part of this increase is attributed to the fact of keeping smaller flocks, but more is due to judicious crossing, constant attention, and liberal feeding. The Spanish wool was not worth as much as the pure Saxon, but the wool-grower gained in the decreased loss of his sheep, the improvement of their constitution, and the less attention they required. Some flocks in 1861 sheared largely over the average of 3.16 pounds, notably that of William Berry, jr., who from 147 sheep sheared 891 pounds of wool washed on the sheep's back, an average of over 6 pounds, and in every respect a fine wool, from strong healthy sheep. Many, however, stuck to the Saxony sheep, and there were thousands of full-blooded ones in Washington County alone in 1860, and hundreds in adjoining counties of Pennsylvania and Virginia. The flocks of full-blooded Saxonies yielded 2½ pounds of wool per head. There was in many quarters an indisposition to get clear of them, and they lingered here when in other sections of the country they had long since been abandoned. It was a matter of pride with their owners to have a fine, clean clip of wool even long after it paid to raise it. But as the demand

for fine wool diminished and half-blood or medium became more marketable more Saxony flocks were crossed.

The Saxonies of western Pennsylvania and West Virginia were not the delicate sheep they were found to be in the East, but were as hardy as any introduced there and remarkable for the quality of their wool. In 1870 there were still left in Brooke and Ohio counties, W. Va., 50,000 to 60,000 Saxony sheep, producing each 2½ to 3 pounds of wool, and nearly all the fine-wool growers who had abandoned the Saxony some years previous, to introduce into their flocks the Vermont Spanish sheep, discontinued the use of the latter. They decided that the increased weight of fleece did not compensate them for foot-rot and other drawbacks, which were not known among the Saxonies and the old Black-Top Merino, or by what was better known as the Wells and Dickinson sheep. But the low price of Saxony wool was discouraging to the growers and a gradual change came about, by which the Delaine Merinos were substituted for both the Saxony and the more objectionable strains of the Spanish Merino.

A few Silesian sheep were introduced into the county about 1858, a smooth, well formed and handsome sheep, about the weight of the Saxon, the rams weighing 100 to 120 pounds gross. The wool was fine and well set on the animal, containing as many fibers to the square inch as the Saxon or any of the finer breeds, and at one time when fine wool with a short staple was much sought for they would have been esteemed as a valuable acquisition, but in 1858 to 1860, when a longer staple was in demand without so much regard to fineness, they did not receive much attention and their introduction was limited to a few flocks and in small number. In West Virginia they were more popular, and many flocks were crossed with them about 1860 and a few succeeding years. An argument against the Silesian was that it was inferior to the Vermont Atwood Merino. In 1864 W. P. Atkinson, of Elm Grove, W. Va., had three Silesian rams. Two of them were sheared in May without being washed. One weighed after the fleece was off 143 pounds. His wool in the dirt weighed 10 pounds, which after scouring weighed 3 7/16 pounds. The other one weighed 121 pounds, the unwashed fleece 9 pounds, and when scoured 3½ pounds. An Atwood ram, at the same time, weighing 79 pounds, gave 10½ pounds, unwashed, and 3⅞ pounds of scoured wool, or, considering the weight of carcass, 50 per cent more wool than the Silesian.

The war of the rebellion made a demand for all kinds of wool, coarse and fine; all sold alike, but the grower of superfine wool made the least money. The demand for the greasy, heavy-shearing rams of Vermont and New York became a rage, and most of the wool-growers went with the current in that direction; few, indeed, made any effort to resist it. The breeding of the Spanish Merino became very profitable, and gave a great impetus to the production of a heavy fleece producing sheep. The result was a decided increase of wool per head, from 3.17 pounds

in 1860 to 4.36 pounds in 1870, and to 5.24 pounds in 1880. Some ped
greed flocks founded before and at this time may be noted.

Mr. Robert Perrine, of Patterson's Mills, Washington County, la
the foundation of a Vermont Merino flock in 1856 by the purchase
13 ewes and 3 rams from Edwin Hammond, and in 1858 8 ewes fro
W. R. Remele, and subsequent purchases of ewes from H. W. Hammon
E. S. Stowell, Victor Wright and others, of same blood. He used ra
bred by E. Hammond, V. Wright, and others, of Vermont. This becan
a first-class flock and was liberally drawn upon to lay the foundation
and improve flocks in Pennsylvania, Virginia, and Ohio.

Mr. W. L. Archer, of Burgettstown, Washington County, laid t
foundation of his flock in 1857 and three years succeeding, by purchas
of Stephen and Chauncey Atwood, and others breeding the Atwo
blood, of 19 ewes. From 1860 to 1871 39 ewes and some rams were pu
chased of the Messrs. Hammond, of Middlebury, Vt. This flock made
good reputation and was largely instrumental in disseminating the pu
Atwood blood in western Pennsylvania and Ohio. The best comme
tary upon the efforts of Mr. Archer to preserve the purity of his stra
lies in the fact that at the annual fair of the Pennsylvania Agricultur
Society, held at Philadelphia in 1880, he took six of the premiums offer
for fine-wool sheep, and the other six premiums were awarded to S.
Work, of Buffalo Township; James Glass, of Burgettstown; and Willia
A. Herriott, of Oakdale, all of whom obtained their stock from M
Archer.

Mr. J. C. Gist, of Brooke County, W. Va., began a flock in 1862
purchase of ewes and rams of Eli Keller, Newark, Ohio, bred fr
stock purchased of Edwin Hammond, Middlebury, Vt., and by purchas
of Henry Thorp, Charlotte, Vt., and others breeding Atwood blood.

Mr. C. H. Beall, of Brooke County, laid the foundation of a Spani
Merino flock in 1863–'64 in purchases of ewes from S. G. Holyoke,
Albans, Vt.; W. R. Remele, Middlebury, Vt., and from the Hammo
and Elitharp flocks, and by subsequent purchases of the same blo
This flock sustained a high reputation and its owner was one of t
most skillful breeders of that section of the county.

Mr. Francis Cunningham, of Cross Creek village, Washington Coun
founded a Spanish Merino flock in 1863 by a purchase of 3 Pe
sylvania and 4 Vermont bred ewes from Robert Perrine. He th
took several ewes from Mr. Perrine on shares for part of the increa

All were of pure Atwood blood. In 1864 Mr. James Glass, of B
gettstown, began a flock by the purchase of 2 ewes of S. G. Holyo
of Vermont. In 1866 he added ewes from the flocks of S. G. Holyo
and W. L. Archer, and used rams from the Hammond flock. Mr. Jo
P. Wood, of the same place, also founded a flock in 1864 by the p
chase of 2 ewes from F. H. Dean, West Cornwall, Vt., and breedi
them and their descendants to Dean's ram, Little Wrinkley, Gold Dr
and other rams of same blood.

HAINES, DEL.

Sarbert & W. Heinze Litho Co. New York

"QUEEN."

DESCENDANT OF HUMPHREY'S IMPORTATION FROM SPAIN IN 1802.

FROM "U. S. MERINO SHEEP REGISTER," VOL. I, 1876.

In 1868 Messrs. D. M. Bailey Bros., of Washington County, founded a flock by ewes purchased of J. A. M. Evans, executor of the estate of Samuel McFarland, of the same county, and in a subsequent purchase of John M. Miller, and using rams bred by W. L. Archer. Mr. John M. Miller, of Hickory, began his flock in 1868 by the purchase of 25 ewes from W. L. Archer, which were bred to Archer's ram and those bred by Edwin Hammond and James Glass. Mr. Alexander McCalmont, of Hickory, also laid the foundation of a flock in 1868 by the purchase of 25 ewes from W. L. Archer, and used rams from Mr. Archer's flock and those bred by Edwin Hammond, James Glass, and others of Atwood blood.

There were many other flocks of Spanish Merinos founded from 1856 to 1870, in various parts of western Pennsylvania and West Virginia, which the vicissitudes of the woolen industry have driven from the field, or which have become mixed in character. Many fine flocks still exist which do not find notice in the various registers, but which, nevertheless, furnish superior fleeces and assist in maintaining the high standard of wools in this section.

The protection given the wool industry by the tariff of 1867 was sensibly felt by the growers in Washington County, and, in fact, throughout all the western country. Of Washington County it is said:

> Stately sheep-barns were built, sheep-troughs were made, good hay-racks provided, more attention paid to cutting and curing good green hay; sheep were kept in smaller flocks, the culls were fattened and sold for the shambles, and wool-growing became profitable, even although the price of such wool had fallen to 35 cents a pound.

What was true of Washington County was also true of West Virginia. The business of wool-growing was good and continued to expand constantly, taking in new territory and employing new men. Mr. C. H. Beall, writing in 1876, said:

> The grade of our flocks, the quantity and quality of their wool, have of late years greatly improved. Our breeders are beginning to realize the fact that if sheep are profitable at all, those are most so that yield the greatest number of pounds of wool of the required degree of fineness. This has induced sheep-breeders to exercise more care in the selection of stock rams, and to breed with special reference both to quantity and quality. The more wealthy and enterprising stock-owners are, for this purpose, led to get their stock rams directly from Vermont. Here, by a long course of careful and systematic breeding and by the continued crossing of sheep of the pure Spanish blood, the Merino has been brought to a state of perfection higher than anywhere else in the world. Some of our leading breeders have recently also imported considerable flocks of pure-bred Merino ewes from Vermont. The result of the increased care in breeding is that the character of the sheep generally in the State has been elevated with a decided improvement in the quality and increase in the quantity of their wool. Besides, we have to-day flocks of pure Merino ewes, which, in their forms and fleeces, rival the finest products of Vermont.

About 1880 the sheep-breeders of Washington County began to question the profit and propriety of the large wrinkles of the Vermont Merino, and to breed them out, retaining the increased size of the animal and the lengthened staple of the wool. The direction of breed-

ing was toward a delaine wool. The foundation of a branch of textile industry, that of combing, spinning, and weaving wool into fine worsted goods, was laid by Mr. E. R. Mudge, of Boston. This process of combing, instead of carding, is one in which the fibers or strands of wool are laid parallel with each other and spun at full length in the yarn, thus getting all the strength of fiber. It is thereby susceptible of being made the finest as well as the strongest and most durable of any fabric of woolen production, and, moreover, it became very fashionable. Hence the utility of growing a wool that would meet this demand. The breeders of the Meade and Dickinson sheep thought they could supply the desired article and bred in that direction, for what was then termed a Delaine Merino.

The foundation of this Merino was found in many of the Washington County flocks, and particularly in those of John McNary, William McNary, Ebenezer McClelland, George Craighead, and others already noticed. To these must be added the flock of R. H. Russell, of Houstonville. The foundation of this flock was the purchase of 50 Black-Top Merino ewes from William Davis, of North Strabane, in 1852. The William Davis flock was made from selections from the flock of William Brownlee. On these 50 ewes and their descendants were bred rams of the old Black-Top flocks, purchased of well-known breeders, always keeping in view a large, well-developed sheep, and never keeping a ewe for breeding purposes unless she was such as combined a healthy, vigorous constitution and large form with a big fleece. Thus within itself, more than by additions from purchase, were many of the best characteristics of the flock attained. An oily, large, and in many respects a very popular Vermont ram was bought about 1860, and used for three years. In 1871 the Spanish ram Victor was purchased of John M. Miller. He was a sheep of uncommon individual merit as to constitution, form, size of body, as also to covering, length and thickness of wool, and impressed his characteristics upon the flock for many generations. His wool was long and strong in fiber. Although from 14 pounds when he was a lamb to 20 pounds weight at maturity, the fleece was so large and white that it was always regarded even at that weight as merchantable wool. This ram, Victor, and the ram purchased from Mr. C. H. Beall and added to the McClelland flock, known as the Beall ram, gave name to the Victor-Beall Delaine Merino, now known as the Delaine Merino.

To encourage the future line breeding of this sheep an association was formed in 1882 "to combine in one prepotent animal all the excellencies of the different classes of the Merino family of sheep on a mutton carcass, which is to compete sharply with the so-called mutton breeds for supremacy in the mutton markets of the country." In the preface to the first volume of its register the association claims that the family of sheep designated as the Victor-Beall Delaine Merino has, by years of careful breeding, assumed certain characteristics so well established

and defined as to entitle it to a place among the pure-blooded varieties of the country, and that the different flocks from which selections were made as foundations for future breeding were such as traced back to early importations of Spanish Merino. Additional blood has been combined with the Spanish Merino blood by judicious selections from the best and purest Merino blood to be obtained in the United States. The association makes no claim to line breeding, as the Spanish Merino has been bred, and while not disclaiming any introduction of Spanish blood, they make the legitimate deduction that, as the Spanish Merino is the parent stock of all families of the American Merino, therefore a cross of any of the pure-bred families of Merinos with any other flock of the same blood in nowise vitiates the purity of the blood of the progeny of such a cross. Thus a cross between the Black-Tops, so called, and Spanish Merino but brings together like blood and secures a cross as opposed to in-and-in breeding, which sooner or later impairs the vitality and leads to degeneracy and decay. Victor-Beall Delaine Merino is claimed as such a selection from Black-Top and Spanish Merino as secures the desirable characteristics of each family, and, as far as possible, avoids that which is objectionable in either. Moreover, this family of sheep has been bred and kept in large flocks without housing in summer, and bred also to produce a straight sheep foot in order thereby to avoid one of the most perplexing evils with which the breeder has to contend—a spongy, clubby foot, predisposed to disease.*

The special characteristics of the Delaine Merino may be gathered from the established scale of points as given by the Delaine Merino Sheep Breeders' Association, in their Register:

	No. points.
(1) Constitution	10
(2) Heavy round the heart	6
(3) Short, heavy neck	6
(4) Good dewlap	5
(5) Broad back	8
(6) Well sprung ribs	5
(7) Short legs	6
(8) Heavy bone	8
(9) Small, sharp foot	10
(10) Length of staple one year's growth, 3 inches	8
(11) Density of fleece	8
(12) Darkish coat on top	5
(13) Opening up white	5
(14) Good flow of white oil	5
(15) Good crimp in staple	5
Perfection	100

The weight of rams at maturity is not less than 150 pounds, and the ewes not less than 100 pounds. As to details, the constitution must be robust, the eyes bright, the body compactly built, head and neck on

* National Delaine Register, Vol. III, p. 19.

line with the back; the entire chest uniform in size, deep, and rounding the neck straight and short from top of head to shoulder, deep an folded. The dewlap should start on top of neck near the shoulde widening on each side and hanging deep in front of the forelegs, wit small folds at intervals to back of head. The back straight and fl from shoulder to tail. The ribs starting at right angles from the bac bone, curving, and deep; as long before as behind, making a barre like chest. The legs straight, short, and flat-boned; standing fair und the body. Flat, broad limbs; strong ribs; heavy shoulder blade. neat, small foot, well under the leg and wide at the heel. The wo should be uniform in length all over the body, belly, and limbs to th knees, and covering the face square to the eyes, and the fleece shoul present a smooth, uniform surface over the animal and be uniformly dark on its outer end. A pure, soluble, white oil should be evenly di tributed along the fiber, enough to protect the fleece, giving it a health and rich appearance. There should be a short spiral crimp to the woo evidence of it being pure Merino.

In 1887 the flocks of registered Delaine sheep averaged 110 pounds t the head for ewes, 100 to 110 pounds for yearling rams, and 180 pound for two-year-old rams. The ewes sheared a fleece of No. 1 Delain wool of 8 pounds, brook-washed, on the average, rams 12 to 1 pounds. Of unwashed wool the ewes would furnish 10 to 15 pounds the rams 16 to 22 pounds, all white.

The characteristics, history, and improvements of the Washingto County Delaine Merinos are briefly set forth in a communication fro James McClelland, of Canonsburg, one of their most successful breed ers:

The different flocks of the county being in a great measure similar at first, in aft years of breeding took shape and character from the caprice of the breeder. Shee kept in large flocks on bare pastures and without being fed grain will develop a fin wool, but a smaller, less vigorous animal; while in smaller flocks on rich pastu and grain fed will develop into a larger animal, more wool, but of coarse quality This was perhaps about the only difference in the flocks of the county up to abou 1850. But so marked had that difference become at that time that the leading flock of the county each had a character especially its own, and every one knew wha was meant by the Brownlee, the McClelland, the Berry, the Craighead, the McNary the Beall, and other breeders' flocks of the county. Yet in all this difference ther was this similarity of the original that had now been much changed—there were n wrinkles, or completely covered, or dense wool sheep, such as had been develope among the Spanish breeders of Vermont and other Eastern States; but a bare-face bare-legged, and short wool on lower part of sides and belly of the sheep; and pounds of wool per head was a high average for any flock, and 3 pounds was perha above the average of the flocks of the county. From 1850 to 1860 large numbers the Vermont or registered Spanish Merinos were brought to the county. A fe thoroughbred Spanish flocks were started, and the use of heavy wooled, wrinkle rams on the old flocks of the county was a subject largely discussed, with a gre difference of opinion and of practice in the matter.

The war of the rebellion made an unusual demand for wool, and as very little di crimination was made between the different classes of wool, quantity rather tha quality was the measure of profit. This made the Spanish Merino very popular, an

Hamer, Del.

MERINO RAM "WALL STREET."
AT TWO YEARS OLD. (REGISTER No. 373.)
FROM "NATIONAL DELAINE REGISTER," VOL. III.

HAINES, DEL.

DELAINE MERINO EWE.

REGISTER NO. 408.

FROM "NATIONAL DELAINE REGISTER," VOL. III, 1888.

there were but few, if any, flock masters of the county that withstood the temptation to increase the weight of their fleece by using the Spanish rams on their flocks. The result was to nearly all breeders a satisfactory one. It was not a cross as between different breeds, which sometimes is only disastrous, but an infusion of new blood of the same species, which has always been regarded as legitimate and proper in the breeding of any of our domestic animals, and when done judiciously is attended with the best results. So it proved in this case. A large vigorous body, well covered from nose to hoof, with a very desirable class of wool, and thickly set, differing from the old Washington County sheep in covering and quantity of wool; and from the Spanish, on a larger, smoother, and more vigorous body, and a better mutton, making a sheep that has no equal in its suitableness to all the best interests and varied circumstances of the American shepherd. Another important circumstance in this connection was the invention of machinery for the combing of fine wool. Before the invention of E. R. Mudge, now deceased, of Boston, Mass., only coarse, long wool was combed; fine wool was carded. But by this invention fine wool of a given length and strength is successfully combed, by which process the finest, most fashionable, durable, and comfortable clothing is manfactured. This placed Delaine wool at a premium in the market, and turned the attention of wool-growers to the production of such wool. The best sheep to produce such wool was just such a sheep as had been devoloped by the use of the Spanish or Vermont rams on the Washington County large-bodied sheep, as it required a vigorous constitution to give strength.

The men who organized the National Delaine Association were the first to ever advertise as a distinct breed the Delaine Merino sheep. This was in 1878, and they were shown as such at agricultural fairs of the county in that year. The flocks from which the original selections were made ran back with some degree of purity to the imported flock of Alexander Reed in 1819. The use of Spanish rams on these flocks, made in 1860 to 1870, was made with the view of producing Delaine wool as a specialty. The rams for such breeding purposes were selected with a view to size, covering, quality and quantity of wool. No very small or excessively wrinkled sheep with very oily or gummy wool was used. * * * The Delaines differ from all other families of the Merino in that they combine length, strength, density, and covering of wool on the largest and most vigorous body of any family. Others may be equal in one or other of the above qualities, but no other is their equal in all combined. This difference is the improvement that is claimed as the result of most careful and judicious breeding, and so well have these qualities been established that they will transmit them with almost unerring certainty, and are therefore very valuable for the purpose of breeding on other families that are wanting in this regard. They also excel all other families as a mutton sheep. The manner of breeding these sheep has developed a tendency to early maturity. Easily fattened and large bodied, they are rivals of any of the famous mutton breeds themselves. If fattened on oat and root crops, as the famous English mutton is in England, they would excel any large gross mutton breed in the production of tender, juicy, delicious, healthful meat, as the co-relation existing between different parts of the animal give similarity, and the fine-wooled sheep will give the fine texture of muscle and flesh.

Some breeders of the Delaine sheep, believing that individual merit should be the test admitting sheep to registry, formed the Standard Delaine Spanish Merino Sheep Breeders' Association, in February, 1890. The greatest difference between this and the old Delaine Association is that it requires more individual merit to be admitted to registry than in the old association, more density of fleece, better surface, better quarters, and shorter legs. The sheep must stand a close inspection by a competent judge, and where it falls short of 60 per cent in

any one point it can not be admitted, even though the sire and dam are recorded. In this way the association hopes to dispose of all the culls which are said to be burdensome to all other registers. The membership of this association embraces breeders of the States of Pennsylvania, West Virginia, Ohio, and Michigan. Mr. S. M. Cleaver, of East Bethlehem, Washington County, the secretary of this association, made a show of the Standard Delaine sheep at the Washington County fair, in September, 1891, and carried off all the first premiums offered for lambs.

The improvement looked for by the Standard Delaine Spanish Merino Association may be stated in the words of its secretary, in a circular letter of April 2, 1890:

We want to encourage the improvement of the Delaine type of the Merinos, giving them a better surface, more density, more weight of fleece, and better quarters than we find in the Delaine type. We think this can be done by breeding from the deep-bodied, plain ram, having a long staple of wool; or if the ewes are very wrinkly, a Delaine ram from a plain-bred flock would better meet the wants of breeders in producing this type. Any pure Merino blood, descendants of the blood-line registers, are recognized where they have individual merit that will scale in accordance with our rules. The demand of the times calls for a plain body growing a Delaine staple. Long experience teaches us that it is almost impossible to keep up density and weight of fleece to give the best results when wrinkles are entirely done away with; for this reason it is important to stay in the blood of wrinkly sheep in selecting the sires, yet striving to keep the body clear of wrinkles and the neck nearly so. It is proposed to pay more attention to a good, broad back, and deep, round quarters, making a type easily kept in order. While the fleece will not be as heavy as in the wrinkly type, it should weigh from 7 to 9 pounds, and sell without any reduction. This will equal an oily fleece of 12 to 14 pounds, with a third taken off by the wool buyer. Plain sheep, as a rule, are better milkers, more careful mothers, have better feet, are easier to prepare for the butcher's block. By having access to the different types of the Merino sheep we think we will be able to produce a more profitable wool and mutton Merino than can be found at the present time. But it will require careful scaling of all sheep admitted, and then we must scale the increase to keep out all culls. In this way we will be able to raise the merit.

Scale of points adopted by the Standard Delaine Spanish Merino Register.

(1) Pure Merino blood, which must be established by certificate.	
(2) Constitution, indicated by a deep chest, long rib well arched, giving heart and lung room, with great digestive capacity	20
(3) Fleece XX and Delaine wool. This includes the quantity and quality as shown by weight of fleece, the length and strength of staple, crimp, fineness and trueness of fiber	10
(4) Density of fleece	3
(5) Evenness of surface	3
(6) Evenness of crimp	3
(7) Length of fiber	2
(8) Free flowing oil of the best quality and the right quantity to protect the sheep and preserve the fleece	9
(9) Head, medium size. Ewes showing a feminine appearance; rams, a masculine, with properly turned horns	4
(10) Eyes bright, prominent, and well set apart, with a thick, soft eyelid	3
(11) Nose short, broad, with well-expanded nostrils, skin thick, and covered with a thick furry coating, joining the wool 1 inch below the eyes	4

(12) Ears, medium size, set well apart, thickly coated	2
(13) Neck, short on top, deep and strongly attached to the shoulders, tapering to head; rams with a fold across the breast, and deep neck	4
(14) Fleece covering over the entire body, head, and legs; skin thick and spongy	4
(15) Legs, short, strong, and well apart	2
(16) Feet, neatly shaped, thin hoof, well set under the leg	4
(17) Quarters, deep and well rounded; back, broad, straight, and strongly coupled to quarters	10
(18) Weight of ewes at maturity, 100 pounds and above; rams, 150 and above	8
(19) General appearance, good carriage, bold and vigorous style, symmetrical form	5
Perfection	100

There has been an increasing demand for Delaine sheep from various parts of the United States, and in many places the Washington County sheep are taking possession of the ground formerly occupied by the Vermont and New York Merinos. They are steadily gaining ground in western Pennsylvania and in Ohio, particularly in the southern part of the latter State, and have some favor in northern Ohio, where the sheep husbandry was founded on the eastern Merino. A factor in the popularity of this sheep, as well as the Dickinson Merino and the Black-Top, to which it is closely allied, is that it has mutton capacity. Pittsburg is regarded as one of the best mutton markets in the country, and no better mutton gets to it than some which come from under the fleeces of the Delaine and Black-Top sheep of Washington County.

In 1883, a year following the formation of the Delaine Association, the Black-Top Spanish Merino breeders also formed an association to perpetuate their family, claimed by them as the "oldest pure-bred family in the community." The formation of this association and the scale of points adopted have been noted. The Black-Top Merinos tend more toward the Saxony quality in their staple than some of the other Merino families bred in the county, where the length of staple has been sought for without so much regard to fineness.

A measurement of a three-year old wether from the flock of Matthew Berry is given:

	Ft.	In.
Along the side	3	10
On back from tip of nose to base of tail	4	9
Height	2	4
Girth	4	2
Width	1	7

This wether weighed 182 pounds, and on May 28, 1885, was shorn of a 17-pound fleece. Breeding ewes from the same flock sheared 7 to 9 pounds of washed wool.

There is a great similarity in the Black-Top and the Delaine Merino, and an inexperienced eye would find some difficulty in selection. The Black-Tops are about the same size as the Delaines, with slightly less wool on the face and legs, and are of a darker caste. They agree in

being perfectly plain-bodied, very vigorous, with an even fleece, the staple of which is 3 to 4 inches long, with white oil well distributed throughout, and shearing 13 to 20 pounds of Delaine wool to the ram and 7 to 12 pounds to the ewe, brook-washed.

In 1885 some skillful and ambitious breeders of Washington County, believing that they had made a great improvement on the Black-Top Merino, organized an association known as the Improved Black-Top Merino, and grounded their claims to excellence and merit on what their sheep were at the present "rather than on what they were in the misty past." The high standard of their sheep is largely due to careful and judicious breeding, followed by the vigorous weeding out of all inferior animals. The foundation of this sheep, or rather of the leading flock, was laid by a purchase of 10 ewes by Robert Johnston of George Craighead in 1844. These ewes were bred to Mr. Craighead's rams until 1847, and from that time until 1853 rams were used from the flock of Alexander McConnell. The foundation of Mr. McConnell's flock was purchased from W. R. Dickinson. From 1853 to 1867 rams were used from pure-bred Black-Top flocks, and from 1867 to 1884 these breeding rams were purchased of Matthew Berry. Since 1884 Mr. Johnston has used rams from his own flock. George Black's flock was commenced in 1850 by a purchase of 25 Black-Top ewes of Herman Haines, who bought his foundation of W. R. Dickinson, the sheep of this purchase being bred directly from Humphreys sheep. The ewes selected from Mr. Haines's flock were "above the average size of fine-wool sheep in the county, having a good frame, but not long in the legs, and with clean faces—the growth of wool stopping abruptly on the cheeks, with little or no wool below the knee, the wool being soft, crimpy, and white underneath, the outer ends dark and tipped slightly with a tarry-like substance." These ewes were bred for six years to rams from the William Berry flock, and afterwards to rams from the flocks of Robert Manifold, Joseph Willison, Robert Johnston, and Matthew Berry.

The improved Black-Top Merino Association began with a registry of nine flocks, aggregating 660 sheep. No flock was eligible to registry that had not been bred pure for thirty years or longer, and an advance was made on the weight of sheep as required by the Delaine Registry and the Black-Top. The Delaine Association requires 150 pounds for the rams and 100 pounds for the ewes; the Black-Top Association, 175 pounds for the rams and 125 pounds for the ewes, while the Improved Black-Top Association demands a weight of 180 pounds for rams and 130 pounds for ewes.

Scale of points adopted by the association.

	Points.	Remarks.
Constitution	16	
Size	14	Rams should weigh at maturity 180 pounds, ewes 130 pounds.
General appearance	3	
Body	16	Large, well proportioned, and symmetrical in all its parts.
Head	4	Medium in size, well carried up, wool extending forward between the eyes.
Neck	3	Short and well shaped.
Legs	9	Short, set well apart, with smooth points, and small, thin, shelly feet.
Covering	8	An even fleece, beautifully crimped, covering the body and legs to the knees, and extending well forward between the eyes.
Quality of wool	7	Medium or fine delaine.
Density of fleece	6	A compact fleece, without tendency to be stringy or knotty.
Length of staple	8	A year's growth should not be less than 3½ inches.
Oil	6	Evenly distributed, flowing to the surface and forming a uniform dark or black top.
Perfection	100	

These families of sheep and their crosses are very popular in western Pennsylvania, Virginia, and southeastern Ohio, and for a general-purpose sheep are attracting considerable attention. They are a large, long, and plain sheep, with good feet and great vigor. They are very healthy and full of vitality. By some they are likened to the Southdown in size and symmetry, with a Merino fleece covering them. By others they are found to resemble the French Merino in size and symmetry, early maturity, feeding qualities, and in fleece products. They bear a fine wool of a longer staple than the Merinos of Vermont, western New York, and northern Ohio, wool that sells for 2 or 3 cents per pound more than the wool from these States. By many they are held to be the truest representatives of the American Merino. That which now particularly recommends them is their capacity to produce a good fleece and good mutton. Their modification from a solely wool-bearing sheep to the mutton type has been going on for many years in the hands of careful, thinking, and progressive breeders. Merinos that showed mutton characteristics of a high order have been seized upon and by careful selection those characteristics have been perpetuated and made permanent.

There still lingers in Washington County another family of sheep which holds a place peculiarly its own—the Saxony—and it is represented by a register. The breeders of this improved Saxony, so called, base their claims to merit more on what their sheep are since they have become Americanized than on what they were in Saxony. Singularly enough the foundation of many of these flocks, and the leading one of the Improved Saxony Register, traces to the R. W. Meade importation of the Spanish Merino.

When the Meade importation, or some of the flocks descended from it, were being driven from the vicinity of Philadelphia westward, Joseph Clark, who had purchased Merinos as early as 1810, went, in company with William Brownlee, as far as Uniontown, Fayette County, and purchased from the Meade flock 1 ram and 10 ewes, paying for the ram

$150, and a proportionate sum for the ewes. About 1836 he purchased some imported Saxonies, both rams and ewes, which were bred and crossed on the Spanish Merino flock that he had bred since the Meade purchase. His purchases of breeding rams embraced such as were chosen from the leading flocks of his day, such as William Brownlee, Peabody Atkinson, and others, derived from various sources. About 1841 Mr. Clark purchased a ram from the Saxony flock of Charles B. Smith, of Connecticut. This ram was large and of strong constitution, and proved a most excellent breeder. The style and character of his wool is very plainly marked in the greater part of the flock at this day. In 1856 the flock passed into the possession of John G. Clark. It had been bred in line for a long time, always with regard to the size and form of the sheep, as well as the fleece, which system was continued, and in 1884 the flock consisted of lineal descendants of those purchased by Joseph Clark in 1820.

William Brownlee, who purchased at the same time with Mr. Clark, from the same flock, crossed his Merinos with the long-wooled Saxons received from Dutchess County, N. Y. In 1844 he said that his flock was chiefly Saxon blood and averaged about 3 pounds of clean-washed wool. He gave the preference to the Saxons, as their wool was rather the finest and free of yolk. Mr. Brownlee housed his sheep in the winter, during which time they ate from 6 to 8 tons of hay to the hundred, good clover hay agreeing best with them. In summer they fed on the blue grass of the hills and the clover and timothy in the valley.

William Davis, who commenced keeping the Saxony sheep about 1835, was a shepherd in the employ of Mr. Brownlee and obtained his first sheep from him. John McDowell was also a shepherd in the employ of Mr. Brownlee, and in 1849, when the latter disposed of his entire flock of 1,200 head, selected 227 of the best ewes and 3 rams as the foundation of a flock which he subsequently bred pure, only crossing on the flocks of William Davis, Joseph Clark, Col. James Lee, and some others. Some of these crosses were from imported stock. Asbury Struble commenced a flock about 1840 from some sheep from the flock of Robert Hawkins, of Washington County, said to have been imported Saxons. From that time he introduced changes of blood from about thirty different flocks, all claiming origin from imported stock, and largely drawn from Washington County. His manner of breeding was to keep a certain number of his flock pure with undoubted Saxony blood.

To enumerate the Saxony flocks would be impossible. At one period of time, from 1835 to 1845, there were but few flocks that were not Saxon in full or in part. Those who bred the purest Saxon were Gen. Thomas Patterson, William Brownlee, Jesse Edington, James G. Stream, Col. James Lee, Samuel Clokey, John H. Ewing, Samuel Patterson, and many others. The Saxony flocks of this section were more hardy than those of New York and New England at that time, and in

size, form, and symmetry wholly unlike those of the present day. In most flocks, from 1840 to 1850, everything was sacrificed in order to gain the finest and highest priced staple without regard to constitution, size, or form of the animal, and some of the very best flocks under this system of treatment became worthless. When the craze for extremely fine wool had run its course, the tide then set in the opposite direction and carried everything with it, and heavy, greasy fleeces were the idols of the hour. The flocks were nearly ruined and the wools fell in value.

A few breeders, not carried away in either direction, continued to breed in line from their best stock, producing a large, well-formed, vigorous sheep, retaining at the same time the beautiful, white crimpy wool of the Saxony. They have bred away the leggy characteristics of the old Saxony, and now present a shorter, with a more compact and square build to the carcass, and with more vigor and constitution. By long perseverance the breeders claim to have attained their object, and consider their improved Saxony an established breed, producing with great regularity lambs of the highest order, both in regard to fleece and body. An average yearling ram of this family measures 3 feet 8 inches in length and 2 feet 3 inches in width across the shoulders.

The model Saxon ram of the Washington County breeders of 1855 is thus described:

He should be of medium size, 3 feet 9 inches from nose to root of tail; 3 feet 2 inches around the body; around the flank 3 feet; in height 2 feet 3 inches, a little longer than the Spanish Merino, and not quite so heavily built. The back almost straight, broad over the kidneys; body round; the neck starting almost level with the top of the shoulders, tapering and becoming round towards the head; the head small and neatly set on; no loose skin on the upper part of the neck, or very little; the hoof short and pointed; his eye bright; pleasant countenance, and tame; the skin smooth and healthy looking. When walking with his side to you he should look finished and gay. He should look and feel wooly, not stiff or hard, but soft. The same for ewes. Fine wool on the forehead; wool on his crown fine; short, downy-looking wool on his cheeks; the under part of the neck as fine as possible and crimped. The wool on the body to be as even as possible all over, and should be crimped 24 to 28 crimps to the inch. It should be fine, soft, thickset or compact on the sheep, and should stand straight out; the body well covered, the hip wool soft and crimped. The wool clear white or cream color, moderately yolky, and the surface of fleece a little dark.

The standard description of the Improved Saxony and the scale of points adopted by the association in 1884 are as follows: The sheep should be strong, heavy boned, well proportioned, compactly built, free from wrinkles or folds, short, well-set neck with only slight dewlap; good carriage, stylish, large girt around the heart, and well-shaped feet. The wool must grade XXX or above, long, white, dense, crimpy, free from curly spots on top of shoulders or back, and evenly over the whole body. Sheep only producing the three highest grades of wool—Picknic, Picklock, and XXX—are admitted to registry.

Scale of points.

(1) Blood—tracing through some of the best flocks to imported stock, and the wool must grade XXX or above	1
(2) Constitution—indicated by general appearance	15
(3) Size	10
(4) Body—well proportioned and free from wrinkles	12
(5) Head	5
(6) Neck—short, well set, only slight dewlap	5
(7) Legs and feet—legs short and heavy boned	5
(8) Evenness of fleece—well covered on belly, face, and legs	15
(9) Density of fleece	12
(10) Length of staple and fine crimp	10
(11) Oil—wool opening white	10
Perfection	100

There is not at the present day that demand for the superior wool of the Saxony sheep that renders the multiplication of flocks profitable, but it is believed if larger flocks were formed and a specialty made of superfine wool production of the highest excellence, buyers would be attracted, competition engendered, and the value of each clip enhanced. As it is, however, the Saxonies are on the decline, their breeders are gradually losing interest in them and quitting them for the medium wools.

And yet, notwithstanding times of depression when low prices of wool were discouraging, the Washington County farmers have kept up their flocks better than in any other section of the country, increased and improved them. In 1825 there were 110,000 sheep; in 1836, about 225,000. The number of sheep and pounds of wool for the years 1860, 1870, and 1880 are thus given by the United States census:

Year.	Number of sheep.	Wool.	Average weight of wool per head.
		Pounds.	*Pounds.*
1860	351,252	1,115,868	3.17
1870	426,621	1,862,752	4.36
1880	461,120	2,416,806	5.24

The increase in the weight of fleece from 1860 to 1870 was caused by the general substitution of the Spanish Merino in place of the Saxony. From 1870 to 1880 great care in selecting breeding stock takes credit for the increase of nearly 1 pound per fleece. The number of sheep for 1890 and the amount of wool is not at this writing available, but careful estimates from several sources indicate an average of over 6 pounds per head. And the decade from 1880 to 1890 has not been without its drawbacks. The tariff of 1883 was discouraging to the wool-grower; many flocks were sent out of the county in 1885, some of them across the Missouri River, and many were sacrificed to the butcher. It is estimated that the loss this one year in the county, on wool alone, was

HAINES, DEL.

SAXONY MERINO RAM.

FROM "AMERICAN CULTIVATOR," 1858.

$100,000. Many who had flocks sold them and purchased cattle, but when prices revived, in 1887, sheep again came into favor, and farmers who had sold their flocks at a low price paid high figures to get stocked again, but the tendency was towards mutton sheep to the neglect of the Merinos. The high price of land, the development of natural gas and oil, and the increase of dogs, have operated to retire many from the special business of wool-growing.

A veteran wool-buyer made this statement in 1888: In 1847 he bought 1,700,000 pounds of wool at an average price of 29½ cents. In 1848 he bought 850,000 pounds at 28½ cents. At that time there was not a clip in twenty that made 3 pounds to the fleece. In 1888 the entire clip of Washington County averaged over 5 pounds. Take it at 30 cents and we have more than $1.50 per head, almost double the amount received forty years before. In 1840 he bought 1,400 wethers at $1.12 per head. In 1888 the same grades sold at $4. He had been a wool buyer forty-one years, and when he looked over the list of men who went into wool-growing early and gave it close attention he found that they had all been successful. For the last few years ewes that could be bought for $3 per head were safe for 5 pounds of wool at 30 cents. This was a return of $1.50, while a lamb produced by the ewe would bring an additional $1.50. It cost $1 to keep the sheep. So for $4, the cost of ewe and keep, there was a return of $3 cash, and an old ewe was on hand, worth $3.

The Panhandle counties of West Virginia from 1860 to the present day have shown no decrease in their wool product, but, upon the whole, a gratifying increase. Hardly as large flocks are now kept by individuals as a few years ago, it being found that an appropriate admixture of grain growing, owing to the increased fertility of the soil, is more profitable. The flocks range from 100 to 1,000, and there are more of them.

Up to within a few years the raising of sheep for wool alone monopolized the attention of breeders, but now all the mutton breeds are represented in Washington County and in West Virginia. These have increased, and the demand is greater than the supply, while the fine-wool sheep have correspondingly decreased. The easy access to good markets afforded by railroads has encouraged the raising of early lambs, and many shepherds are crossing their Merinos with the downs. The Leicesters and the Southdowns have long been known in the county, and have been represented by some good flocks, but of the former few, if any, now exist in the pure state. The Cotswolds were introduced prior to 1876, but they are not particularly well adapted to the climate, and are found not to stand the changeable weather as well as some of the short-wooled breeds. Experience, however, proves that for crossing on the Merinos they are equal to any of the breeds. There are but 4 or 5 flocks in Washington County, and about the same number in the four Panhandle counties of West Virginia. These flocks are small,

but choice full-bloods. The Shropshires had quite a run for some time. Like some other English breeds they require abundant, luxurious feed, and careful attention for best results. There are 10 or 12 flocks of pure-bloods in Washington County, and a less number in the adjacent counties of West Virginia.

The Cheviots were introduced into Washington County in 1889, when Thomas M. Patterson, of Patterson's Mills, bought a few in Otsego County, N. Y., since which time three small flocks have been brought into the county. The limited experience shows that the climate and forage agree with them. Mr. Patterson's flock of 50 head in the spring of 1891 averaged 8 pounds of wool per head, the wool 8 inches in length. A ewe, three years old, weighing 196 pounds, clipped 10½ pounds of wool. Twenty ewes dropped 32 lambs. Mr. Patterson reports that they are not liable to foot-rot, an exemption which gives them a very great advantage over any other breed of sheep.

The latest acquisition to the mutton sheep of Washington County are the Dorset Horns. The first introduction of these sheep was by M. A. Cooper in 1890, and consisted of two ewes. In the summer of 1891 Mr. Cooper made another importation, and Joseph B. Henderson and H. S. Buchanan sailed for England to make purchases. After spending considerable time among the different breeders of the best English sheep Messrs. Henderson and Buchanan decided that the Dorsets possessed some very desirable qualities not found among other breeds of sheep, particularly their great fecundity and their habit of breeding at any season. Beside this they were found to be hardy and robust, not a single diseased or unhealthy sheep being seen of the several thousand coming under their observation. They selected 66 head from the flocks of Thomas Chick, Bernard Kendall and Hale Bros., Dorset, England, and landed 65 at Baltimore; one died on the vessel from suffocation. These sheep were distributed among the following persons in Washington County: M. A. Cooper, Dr. W. S. McCleary, Joseph B. Wylie, William White, J. S. Buchanan & Son, and James L. Henderson. They are all doing remarkably well, and Mr. Henderson's flock of 20 clipped about 10 pounds each of unwashed wool. Some of the ewes will weigh as high as 240 pounds. The object of the importers is to cross the Dorsets upon the Merinos for the raising of early lambs. They are not yet well enough known in the county to become popular, but they are attracting considerable attention.

As a rule in Washington and adjoining counties, where cereal agriculture alone is pursued, the land is less fertile, and for agricultural purposes less valuable, than formerly; while lands devoted to the raising of sheep have increased at least 50 per cent in fertility and productive power, all of which is laid to the credit of the sheep.

CHAPTER VII.

THE SHEEP HUSBANDRY OF OHIO, INDIANA, ILLINOIS, MICHIGAN, AND WISCONSIN.

OHIO.

The pioneer sheep of Ohio came from Connecticut, New Jersey, and Virginia, and were the common or so-called native sheep raised in those States and generally in the East before the introduction of the Spanish Merino and the improved English breeds. Those from Virginia were the best, and were of the Leicester type. These early sheep were raised almost entirely for their wool, which was worked up around the family hearth into the strong and durable raiment of the pioneer settler.

The first Merino sheep taken into Ohio were those imported by Seth Adams in 1801 and their descendants, numbering about 25 or 30 in 1807, at which time they were taken from Massachusetts to Muskingum County, Ohio. Subsequently some of these were sold to parties in the State and in Kentucky. They received much attention, and, as elsewhere stated, were the cause of a newspaper proposition that the banks should be taxed to assist in procuring improved breeds and to provide for their care and increase. In 1809 Israel Putnam, of Marietta, bought of Mr. Adams some full-blood Merinos and founded a flock, which was continued by his son, L. J. P. Putnam. Whether these were from the Massachusetts flocks can not be determined, for, in 1809 and 1810, Mr. Adams, as agent for Col. Humphreys, disposed of many of the latter's sheep throughout Ohio, Kentucky, Tennessee, and other parts of the South and West, and the Putnam purchase may have been Humphreys' sheep. Most of these, however, were half-bloods. These sheep, as far as known, laid the foundation of no flocks, although they are credited with making an improvement in some localities. Israel Putnam, who bought some full-bloods of Mr. Adams in 1809, was an extensive purchaser of Humphreys sheep in 1810. With Capt. Paul Fearing he introduced many of these into southern Ohio, paying as high as $300 for a ram; and it is said that Col. Humphreys, in 1811, sold a ram for 1,600 acres of Ohio land to Capt. Fearing and B. I. Gilman, of Marietta, and this ram laid the foundation for a flock which was kept up many years.

On June 13, 1811, Dr. Increase Matthews, of Putnam, Ohio, bought an Infantado ram and two ewes, just imported into Alexandria, Va., and had them taken in a wagon to his farm in Ohio, where he kept up a pure flock until about 1850.

Most of the fine flocks of Ohio trace their origin to William R. Dickinson. He had sheep that produced as fine wool as any of the imported Saxons, while their fleeces were heavier. He was not entirely carried away by the Saxon craze, nor was he discouraged by the earlier indifference to the Spanish Merino when the failure of manufactures injured their value and their standing. When they were at their lowest ebb and perfectly degraded in the estimation of the public, and suffered to be adulterated and destroyed in every manner, he gave to them the strictest attention, and retained them entirely pure. For many years he supplied all the flocks of the West with full-bred rams, and it was believed by competent judges that, in 1825, Mr. Dickinson could select from his flock individual rams and ewes in as great number and with fleeces as fine as could be found in any flock of like extent in the country, and he obtained this gratifying result principally by his own good management. His ambition was to produce an animal of a remarkably fine fleece, combining to a good degree weight and length of fiber.

William R. Dickinson was born in Virginia in 1779, and in 1807 removed to Steubenville, Ohio, where, in 1816, he entered into the firm established in 1814 by Mr. Bezaleel Wells for the manufacture of woolens, subsequently known as the Wells & Dickinson factory. Previous to this copartnership, or about 1812, for Mr. Dickinson said, in 1826, that he had "for the last fourteen years been zealously rearing and improving," he founded a flock of sheep which became very noted, furnished beginnings for many Ohio flocks, but whose early history is imperfectly known. In a letter written in May, 1826, he said that the foundation of his flocks came from a purchase made of James Caldwell, an extensive breeder of Merinos in New Jersey, who purchased "the cream of almost every importation from Spain during the invasion of that country by the French," and again that this flock, "as long ago as 1806, on the male side, was selected from one of the finest flocks in Saxony (the Muller ram), crossed upon the finest Spanish ewes of Col. Humphreys." There is evidence that before the Caldwell flock came into Mr. Dickinson's possession he owned other sheep, which, however, for the present, we pass by until we follow the disposition of the Caldwell flock, as shown by undoubted facts. Caldwell turned his flock over to Samuel L. Howell, in New Jersey, in 1815, and between that time and the summer of 1821 it was removed from New Jersey to Ohio. That it was taken to Ohio before 1822 or 1823 will appear from a sale made from it which was published in the American Farmer in 1826.

In the summer of 1821 John McDowell and his brother Alexander purchased of Mr. Dickinson 100 Merino ewes for $1,500, and 1 ram for $25. This ram was the product of Columbus, who was the product of the ram imported by Mr. Muller, and one of Col. Humphreys' ewes. In 1826 this flock had increased to 400, and was valued at $6,000.

In 1825 Mr. Dickinson had 2,000 sheep, admitted to be equal to any in the United States, of which 10 Merino rams, wintered by Adam Hil-

deubraud, in his employ, yielded in June of that year 75 pounds of wool, which was sold for 80 cents a pound, or an average of $6 the fleece. Among these 10 rams was Bolivar, who carried off a prize next year at Baltimore, Md. At the Maryland Cattle Show held on June 1 and 2, 1826, José Sylvester Robello, the Brazilian minister, placed at the disposal of the committee having charge of the awards a silver cup "for the ram which, being shorn upon the ground, yielded the greatest weight of pick-lock wool." Mr. Dickinson was conscious that his neighborhood could then furnish as fine stock of Merinos as Saxony could produce, and seeing that a mania was about to set in for Saxony sheep and the country about to be laid under contribution, determined to show that the importation of these sheep was unnecessary, selected Bolivar from his flock and entered him for the Baltimore show. William Patterson, of Baltimore, entered a fine Saxon ram that he had recently imported, and among other entries was a superior Merino ram from the flock of Gen. John Mason, Analostan Island. Bolivar secured the prize, the second prize going to Mr. Patterson's Saxon ram, whose wool was judged by the committee to be a shade finer than Bolivar's, but fell considerably short in quantity. Bolivar was taken back to Steubenville in a wagon, and on July 4 following was one of the principal features of the celebration. In the same year Mr. Dickinson sold him, with a number of the purest and finest Merino ewes, to Dike and Duncan, who began sheep husbandry in Stark County. The price was $100, and he was stated by Mr. Dickinson to have been a Merino of pure American growth, and standing unrivaled, taking him all and all, by any Merino or Saxony ram in the United States. The description of Bolivar, as given by Mr. James McDowell, is that he was a ram of commanding appearance, possessing marked individual character, weighed 140 pounds, broad chest, wide back and shoulders, round body, dewlap and apron, no wrinkles on body, wool 3 inches long, white with a brownish-black surface, wooled to the hoofs, short neck, large horns, could be led by the horns, was extremely gentle, was born in 1820, and died in 1834. He was a pure Humphreys Merino, his granddams having been imported by Humphreys as well as grandsires. Mr. McDowell does not concede that this ram came from the Caldwell flock, but contends that it descended from what he terms Mr. Humphreys' reserve flock of pure Humphreys thoroughbred Spanish Merino sheep.

Mr. Dickinson continued to breed and sell sheep until 1829 or 1830, when reverses in business caused the sale and dispersion of his flocks, as well as those of Mr. B. Wells, his partner in the woolen factory. The sale of the Dickinson flock took place September 10, 1830, and was thus reported:

> Bids were quick and spirited, manifesting on the part of all an eagerness to obtain a share of these valuable animals, and though the prices obtained were low, it must be recollected that a year ago it would have been impossible to effect a cash sale of that number and quality at almost any price. The late advance, however, in the price of wool has given an impetus to the business of wool-growing which promises

a handsome profit to those engaged in it, and it is yet to be hoped that this branch of American enterprise will not be allowed to languish away for want of Government protection. About 1,200 ewes and wethers of the first and second qualities, two-fifths of which were wethers, sold for an average of $3.16 per head. Another lot of about the same number of third and fourth qualities brought on an average of, for ewes, $3.25, and for wethers, $1.63. Five ewes and 5 bucks of the first quality sold for $22.50 per head; 45 bucks (principally yearlings, small and poor) sold at from $5 to $40; the best averaged $22.50.

The sale of this flock was chronicled at the time as a national disaster, but according to Mr. James McDowell it was an inferior flock of grade sheep, which had been previously bought for 62½ cents per head, and which were "levied upon by the United States marshal to make the money on for the Government."

The sheep Mr. Dickinson prized were placed in the hands of Michael Hildenbrand, of Stark County, long before the trouble arose with the Government. All his high-bred sheep, which he had been breeding for many years, were put in the care of Adam Hildenbrand. These sheep were beyond the reach of the Government in any event, but the public did not know it. Mr. Dickinson had intended to remove these sheep to Texas; was at Houston in July, 1831, taken sick with yellow fever, and died there July 28, 1831. * * * He might have lived to see the blood of his flocks disseminated throughout the nation, as the sheep bred by him have, since his death, been scattered, and lost their identity, by being crossed with many other breeds or families of Merinos. They have been rendered almost worthless for stock purposes, except such as have been kept pure and correctly bred to fix the high orginal type for future breeding purposes.*

Mr. McDowell further asserts that as the flock belonging originally to James Caldwell was sent by Samuel L. Howell to Mr. Dickinson to be bred upon shares, Mr. Dickinson taking half the increase, it was not sacrificed under the hammer, but was sent to a distant county, where it suffered much deterioration and fell below its former high estate, but it had done much to improve the character of many Ohio flocks.

Adam Hildenbrand, in a statement made in 1861, says that Mr. Dickinson received on shares 200 very fine and heavy shearers from Dr. Howell, and—

this was considered the best improvement on Mr. Dickinson's flock. I superintended his flock from 1820 until 1830, when Mr. Dickinson failed. Being thoroughly acquainted with his entire flock, I selected, with the best of my skill, 600 of the best of his flock. In 1831 I again purchased 600 of the best of his original flock, retaining on shares Dr. Howell's flock for two years, which is the true basis of my flock. It remained thus as founded by Mr. Dickinson until 1850, when I purchased a small flock of full-blooded Spanish Merinos.

A scientific and successful breeder, who saw the Hildenbrand flock in 1844, said: "It has much of the old Merino character about it—wool thick and close on the pelt, rather short in staple, full of yolk, dark on the outside; a heavy fleece."

In 1854 Mr. T. S. Humrickhouse, a successful and intelligent breeder of Merino sheep in Coshocton County, Ohio, asserted that Americus, of the Caldwell flock, was undoubtedly the ancestor and, so to speak, the

* Dickinson Spanish Merino Sheep Register, Vol. I.

founder of the Wells and Dickinson flock, considered as a distinct family or stock. Columbus, the sire of Americus, was half Muller-German-Spanish and half Humphreys-Spanish. The dam of Americus not being given, it could not be determined whether his blood contained any other element than those derived from the Muller and Humphreys stock. Most likely this dam, as well as the dam of Columbus, was an Humphreys ewe; and, if so, then Americus would have been three-fourths Humphreys-Spanish and one-fourth Muller-German-Spanish, and thus we would be led to the conclusion that the chief excellence of the Wells and Dickinson sheep was derived from the Humphreys importation coming through the Caldwell flock of New Jersey.

Mr. Humrickhouse admitted without reserve the excellence of the Dickinson sheep. It was still discernible when he wrote, especially in the wool, in most of the Western flocks of any pretensions which partook of the blood. But the system of breeding of Mr. Dickinson, who is understood toward the last to have partially admitted the Saxon cross, was such as, while the sheep remained in his hands, to prevent the differentiation of them into a distinct variety. And when the flock was broken up and they became scattered, most of the persons who obtained them either continued the Saxon cross or introduced other elements of diversity; so that, being continually bred toward diversity, the rams could not be relied on for possessing the habit of constancy in the reproduction of their like. The most that could be said of them was that the ewes furnished a good foundation, cheaply attainable, upon which to build a flock by the use of Atwood-Humphreys rams. The cross proved congenial to them, in consequence of their having originally possessed so large an infusion of the Humphreys blood.*

The presence of the Saxon cross in the Dickinson flock is not admitted by all, and an extensive breeder of Wellsburg, W. Va., writing to the Cultivator, under date of November 23, 1847, asserts that the remarkable Saxon fineness of wool for which the flock became noted was due entirely to Mr. Dickinson's own good management, and that with the exception of the descendants of the Muller-Hesse Cassel ram, his flock originated from Spanish sheep of various importations. This view is adopted by another correspondent of the same publication, in March, 1850, in these words:

> It does not, therefore, necessarily follow that because sheep produce wool which is finer than ordinary Merino that they are Saxons, or that any of their ancestors came from Saxony. We might refer, by way of illustration, to examples in our own country, such as the flock of the late W. R. Dickinson, of Steubenville, Ohio, and other flocks in Ohio, Virginia, and Pennsylvania which were derived from this. The great fact to be kept in view is that the properties of the animals (including wool) are modified by the influences which are brought to bear on them. These influences may be classed as food, climate, shelter, and especially the rules observed in the selection of stock for breeding. Thus the Merino sheep, in the course of several generations, may be made to produce either finer or coarser, longer or shorter wool than the original stock.

* Ohio Agricultural Report, 1854.

The fact is established, however, by numerous authorities, that Mr. Dickinson did in the later years of his breeding largely use Saxon blood, and hence the Saxon-Spanish-Merino cross became the predominant stock of the country through which his sheep were disseminated. And Mr. Dickinson having infused into the minds of those who purchased from him the importance of cultivating, to use his own language, "transcendently fine wool," the great ambition of wool-growers was to have the finest fiber, regardless in a great measure of weight of fleece. Hence the stock of the country became so very much refined that many flocks averaged but 2 pounds to the fleece. The French Merino was then introduced to increase weight of fleece, and eventually almost all the good flocks of eastern Ohio, western Pennsylvania, and West Virginia, originally based on the justly celebrated flocks of Wells and Dickinson, had been crossed and recrossed and crossed again with Saxon, and almost everything else, until it was doubted very much whether in 1861 there was a pure-bred Wells and Dickinson sheep in the United States or in the world. There is, however, reason to believe that such a sheep does still exist. An illustration is given herewith of a two-year-old Dickinson ewe that was presented to the Michigan Agricultural College in 1865. She weighed 75 pounds; her fleece 6 pounds 3 ounces.

The reserve thoroughbred flock spoken of by Mr. James McDowell must now be noticed, and the material used, as drawn from the statement made by Adam Hildenbrand in 1861, and by Mr. McDowell, as published in the Dickinson Merino Sheep Register of 1888. Mr. Hildenbrand's statement appears on a preceding page. That of Mr. James McDowell is to the effect that about 1807 or 1808 Thomas Rotch, a Quaker, removed from Connecticut to Stark County, Ohio, taking with him a small flock of Merino sheep. They were superior sheep, and a few of them were of the flock and number imported by Col. Humphreys. They were accompanied to Ohio by John Hall, who testified to the sale from Humphreys to Rotch. In 1809 Mr. Dickinson became the owner of a few of the Humphreys sheep by purchase from Thomas Rotch, and this small flock, closely guarded, was separately marked and continually bred within the importation of 1802, or their descendants, until 1831, when Adam Hildenbrand became the owner of the choice of the flock. Mr. McDowell further says that Mr. Dickinson stated, in the latter years of his life, that he never sold any of the ewes descended from his own pure-bred flock, his sales being of ewes purchased throughout the country, of grade or well-bred Merino flocks or those descended therefrom, in which he dealt extensively, and that the culls of the flock of Merinos which he kept on the shares for Samuel L. Howell (the Caldwell flock) were annually sold.

These last statements must be noticed in connection with other facts which seem to antagonize them. When Mr. Dickinson sold his sheep to wool-growers in eastern Ohio, West Virginia, and western Pennsyl-

HAINES, DEL.

A WELLS AND DICKINSON MERINO EWE, OF 1865.

FROM "MICHIGAN BOARD OF AGRICULTURE," 1866.

vania he represented them as pure-bred sheep, and it would seem incredible to believe that intelligent men could have been imposed upon by grades and culls, or that Mr. Dickinson could have been guilty of such deception. Nor could Mr. Dickinson truthfully have said that he never sold any of the ewes descended from his own pure-bred flock, for, when writing to a friend that in 1826 he had sold Bolivar to Dike and Duncan, he also said that with him he had sold a number of the purest and finest Merino ewes, and such sales by him were frequent.

In 1823 James McDowell became an employé of Mr. Dickinson, and there was still in the flock one ewe of the original Humphreys importation from Spain, which was the subject of Mr. Dickinson's frequent solicitation and of his conversation, and he assured Mr. McDowell that the descendants of that and the other ewes had been bred pure, and were superior to his other flocks and to the Caldwell sheep, both in quality and smoothness of body. James McDowell remained with Mr. Dickinson until the latter's misfortunes, after which, and the passing of the Merino flock to Adam Hildenbrand, he went into the employ of the latter, still caring for the sheep. A part of the consideration given by Mr. Hildenbrand to continue in his employ was a selection of the best two ewe lambs and the second best ram lamb of the last crop of lambs bred by Mr. Dickinson, descended from the marked Humphreys flock, and sired by Bolivar, the winner of the silver cup in 1826. This was in 1831, and the three choice spring lambs were then at the side of their dams, and sired by Bolivar. Bolivar was sold in 1826, as we have seen, but being in the same county could have been used by Mr. Dickinson on the flock.

These three lambs, one ram and two ewes, were the progenitors of James McDowell's flock, which he affirms has been bred pure to the present day, and is known as the Dickinson Spanish Merino, and claimed as the purest Humphreys sheep known. It has a registry and the breeders have adopted a scale of points:

Dickinson-Merino sheep standard of excellence.

[Standard of breeding. Purity of blood. Tracing their descent to the standard bred flock of James McDowell, of Canton, Stark County, Ohio (without admixture of impure blood), which flock descends directly from the thoroughbred flock of W. R. Dickinson, of Ohio, which were purely bred from Merino sheep imported from Spain to the United States by Col. David Humphreys, of Derby, New Haven County, Conn., in the year 1802.]

BODY.	Scale of points.
Deep, round, wide and long, showing mutton capacity, good feeding and thriving qualities, heavy, thick flesh, straight under and top lines, well proportioned, filling every part of its skin when fully matured	
Skin thick, soft, not raised in corrugations, pink red	4
Head small, carried high; quiet, placid eye	4
Nose white, not mottled, covered with fine, soft white hair, wide and slightly arched	3
Ears short, thick, covered with fine, glossy hair	3
Horns small, neatly curved, light yellow color, better without any horns	3
Neck short, arched in under and on top, the base very strong	4
Shoulders wide, deep, rounded, breast bone projecting forward of front limbs	5
Back straight, wide, ribs extending out horizontal from spinal column, rounding in line with shoulders, extending close back to hips	9

Dickinson-Merino sheep standard of excellence—Continued.

BODY.	Scale of points.
Loins strong, wide	3
Hips wide, long	3
Thighs wide, thick flesh extending close down to hock joints	4
Limbs short, bone heavy, joints smooth and flat. The contour of, to show perpendicular lines from elbow and stifle joints to center of hoofs, and from base of tail to center of a straight line drawn horizontally from tops of hock joints, when standing erect on limbs	5
Hoofs deep, thin white texture, tough and elastic	4
Size of full grown rams 250, and ewes 150 pounds	5
Internal organs strong	4
Mature early, 2½ years	3
FLEECE.	
Smooth, even, dense, soft to the touch	6
Staple 3 to 5 inches, fibers glossy, crimped	4
Quality XX, XXX or above, fine delaine combing	6
Quantity, rams, 15 to 25 pounds. Ewes, 10 to 15 pounds unwashed wool	6
Covering entire body with even length and grade of wool except parts injuring thrift and comfort of sheep, entirely free from gum and hair	8
Oil very fluid, white or nearly so, enough to preserve the wool raising to outer ends of fibers	5
Perfection	100

The Dickinson Merino rams attain a good age and are strong, active, and healthy. They shear from 15 to 26 pounds of clear, fine, oily wool, with a crimp staple, and with but little or no difference of grade on the roughest part of the hips. Bolivar Seventh, one of the present stock rams of the McDowell flock, gave 20 pounds at his second and third shearing. Wonderful, a 2-year-old ram, weighed about 200 pounds. His first fleece, at fourteen months' growth, was 25 pounds; the second one, of one year's growth, 26 pounds. The staple was 5¼ inches long, with a soft, silken fiber. This length of staple was exceeded by Snowflake, another stock ram of the McDowell flock. Snowflake's staple at the best growth was 5 inches long and had a beautiful crimp.

The leading breeders of the Dickinson Merino follow the standard here laid down, and are producing sheep that are growing in popularity and commanding extensive sales not only in Ohio, but in various sections of the Union. They are already a good mutton sheep, and their breeders think it entirely possible to increase their mutton quality while increasing the yield and refining the quality of the fleece. While not equaling the French Merino in size, it is claimed that these sheep have better mutton qualities and better wool. They have early maturity, so essential to a mutton sheep, and are free from the rank smell so liable to accompany the carcass of the Spanish Merino. The wool competes with any wool in the market for fine delaine purposes, and generally finds ready sale. They can be raised in large flocks or in small ones, and are equally adapted to range feedings or to a system of mixed husbandry, and are able to maintain themselves under various conditions of soil and climate. In a system of mixed agriculture such as is now diffusing itself over the whole country, particularly east of the Mississippi, these sheep will find a favored place.

Bezaleel Wells was from Maryland, and was early employed in the

HAINES, DEL.

MERINO RAM "SNOWFLAKE," No. 49.
FROM "CATALOGUE OF THE NATIONAL DIGGINSON SHEEP."

survey of the public lands in Ohio. In 1795 he located and purchased 1,100 acres of land on the Ohio River, where the city of Steubenville now stands. In 1800 he removed with his family from Maryland to Steubenville, where he occupied himself in clearing his lands and preparing his farm. In 1814 he formed a partnership with three other gentlemen and erected an extensive woolen manufactory in Steubenville. W. R. Dickinson became a member of the firm in 1816. The enterprise proved a great source of revenue to the breeders of sheep, by creating a good market and a home manufacture of the wool grown in that part of Ohio and in western Pensylvania and the adjoining counties of West Virginia. The firm made a most excellent quality of broadcloth, which was well known and highly appreciated in eastern cities. In 1814 or 1815 Mr. Wells purchased from William Jarvis a large number of sheep, said to have been several hundred, and placed them on his farm near Steubenville, where they were kept until 1824, at which time the flock numbered 3,500 head, said to have been pure Spanish Merinos. In 1824 a large tract of land was purchased in Stark County, about 5 miles west of Canton, where a great part of the flock was summered, being driven back to Steubenville to be wintered. This migratory system was quite successful, the flock in its summer feeding ground and in its transit being watched by shepherds who made their headquarters in a cart drawn by oxen. Wolves were most to be feared.

Occasional sales were made from this flock, and the wool was used in the Steubenville factory. In 1825 Alexander Wells, son of Bezaleel Wells, received from W. J. Miller, of Philadelphia, 240 ewes, and in 1826 bought of Mr. Miller 260 more ewes. These Miller sheep were from the R. W. Meade importation of Infantados of 1810, and had been raised by Mr. Miller for Mr. Meade. They had been crossed with the Saxony sheep, of which Mr. Miller had made, with Col. Shephard, of Massachusetts, the first importation into the country. These sheep were kept separate until 1829, when they were commingled with the flock of Bezaleel Wells established in 1814–'15. The best rams of the Dickinson flock were used on that of Mr. Wells, and the best rams of the Wells flocks were used by Mr. Dickinson. In 1829 the flock numbered about 3,000 head. It presented a grand appearance, and was supposed to be unequaled in number, form, and weight of fleece. The flock would clip about 5 pounds of washed wool per head. The flock was sold in 1829 or 1830 at public sale, many of the purchasers being from Pennsylvania and western Virginia, but the greater part from Ohio. It is believed, however, that the choice sheep found their way into Washington County, Pa., to enrich the flocks of Alexander Reed, William Brownlee, John H. Ewing, C. H. Beall, and others.

Most of the fine-wooled flocks in the eastern part of Ohio had a similar origin. Previous to the introduction of the Spanish Merino by B. Wells and W. R. Dickinson, the sheep were of the common variety, coarse-wooled, leggy, with good constitution, and excellent nurses;

they could run like deer, were very prolific, and, for the attention which was then given them, were perhaps better suited to the people at that time than any other breed of sheep. When the country became more thickly settled and farms were opened in the forests, the Dickinson sheep came to the very doors of the farmers; rams were purchased by them to cross on the native ewes, constituting the first cross, and the whole system of breeding since that time, with but few exceptions, has been crossing and recrossing in every direction. First came the Saxon mania, and the wool-growers added very much to the fineness, crimp, beauty, and silky character of the wool, but found themselves deficient in quality. This prepared the way for the reception of the heavy fleeced French Merino, but only a few were led away, and the current again flowed in the direction of the Spanish Merino. But by this time the original blood of the Dickinson and Wells sheep had been practically obliterated from the whole country, and the disappearance of the Saxony and the French Merino followed in order. The history of some of the early flocks and the changes which they have undergone will be given.

In 1822 James Moores, of Jefferson County, purchased a few ewes from either the Wells or Dickinson flock, which, says the Ohio Register, proved to be a source of profit. His family spun and carded the wool by hand, and wove the cloth from which the garments were made which clothed them. In 1825 he sold his clip of wool at Steubenville for $1 per pound. In 1834 this flock numbered nearly 100 head, from which time frequent additions were made. In 1843 the flock averaged 4 pounds of washed wool. Mr. Moores died in 1848, and his son, James Moores, took about 40 head of the flock, adding by purchase, in 1850, 5 ewes descended from the W. R. Dickinson flock. In 1856 Mr. Moores began shipping rams and ewes to Texas, and in 1860 the flock which had been kept on the farm for thirty-eight years was shipped to Texas.

In 1830 Robert Hervey, of Washington County, Pa., purchased at the sale of either Wells or Dickinson, probably the latter, about 200 head of sheep, and in October, 1832, took in partnership with him his nephew, Robert Hervey, of Unionport, Jefferson County, Ohio. Their business was that of buying and selling Merino sheep. This partnership was dissolved in 1834, and Robert Hervey, the nephew, received as his share of the flock remaining 34 lambs. These lambs, with 32 ewes and a ram purchased from Robert Hervey, and of the same blood, were taken to the lands controlled by William H. Hervey, 1½ miles from Bloomfield, Jefferson County, Ohio. The flock was kept on these lands for about fifteen years. In 1849 it numbered 500 head of round-bodied, healthy sheep, having a dark, well-covered surface on the fleece, a white crimpy wool, and good length of staple, the fleeces weighing from 3½ to 5 pounds of washed wool. In 1854 French blood was introduced into the flock, but the result was unsatisfactory, and Spanish rams were thereafter used on the flock until 1864, when G. W.

Hervey became owner of and assumed management of the flock. Purchases of sheep were made from the then acknowledged best flock of Spanish Merino sheep in the country, and all the original flock which had been bred on the farm and in possession of William H. Hervey for over thirty years were disposed of and replaced by other sheep.

There were many flocks formed from 1840 to 1860 and from every variety of sheep, the Dickinson, the western Pennsylvania, and the Vermont Merino, and grades of Saxon, French, and Silesians, the flocks in 1862 running from 60 to 1,200 animals in number. The average of the blood was about three-fourths Merino, and the wool had a high reputation for fineness of fiber, strength, and elasticity.

The adjoining counties of Columbia, Belmont, and Monroe had flocks of the same general character as Jefferson, beginning with the coarse wood rangers, then improved from the Wells and Dickinson flocks, mixed with the Saxon and French Merinos, which in time gave way to the Spanish Merino and its later development, the Black-Top Merino.

The counties of the Muskingum Valley, directly west of the preceeding four river counties, derived their fine-wooled sheep from the latter, and were mostly of the Wells and Dickinson flocks, with additions from Washington and Beaver counties, Pa., and Brooke and Hancock counties, Va.

The earliest fine-wooled flocks of Stark County were those of Thomas Rotch, W. R. Dickinson, Adam Hildenbrand, and James McDowell, already noticed. These determined the character of the early sheep of the county, for nearly all subsequent flocks owed their foundation to them and to additions from the flocks of western Pennsylvania. In 1832 Henry Everhard bought some ewes from Adam Hildenbrand, which were raised from the Dickinson flock, and for the next twelve years he used rams from Hildenbrand's flock; then, in 1844, he bought a few Saxon ewes and one ram. He bred a few pure Saxons and crossed some of the Dickinson sheep with them; but finding that his flock was growing uneven, and seeing no great improvement, he sold out the Saxon blood, including the crosses. In 1846 he bought a pure-bred Dickinson ram from Thomas Noble, and continued to use his own and other pure-bred Dickinson sheep to 1863, at which time he had a full-blood flock of 22 rams and 300 ewes. Some of the best flocks of the county have been improved by sheep from his flock. From 1837 to 1850 not a great many new flocks were formed, but at the latter date, when the flocks of the county were about half-blood Spanish Merino and some Saxony, there began an improvement in the flocks and an increase in their number, and many Vermont Merinos were brought into the county. In 1851 W. M. Cunningham obtained from the flock of Thomas Noble 130 head, 60 of which were choice breeding ewes. In the same year he purchased of James Patterson, of Tuscarawas County, 158 head, and about the same time he bought of Henry O. Gifford, of Vermont, 10 ewes and 2 rams of the Hammond stock,

raised by Charles Cook. Soon afterward he bought the celebrated ram Little Brownlee from the estate of Thomas Noble. Mr. Noble was an extensive wool-grower of the county, who formed his flock in 1834 by the purchase of Dickinson sheep from Adam Hildenbrand, and added to it two celebrated rams from the flock of William Brownlee, of Washington County, Pa. In 1844 his flock numbered over 1,500, and averaged 3 pounds of wool per head. Jacob Dager in 1853 purchased from Mr. Brownlee and Mr. Rankin a ram and a few ewes, the predominant blood being Saxon. He bred them two years, but the wool being too light he went back to the pure Dickinson Spanish and bred in that line until 1860, when he introduced the Atwood blood. Ames D. Baker, in 1851, and Samuel Boyd, in 1852, formed flocks from the Washington County, Pa., sheep; from 1852 to 1860 many large flocks were formed, full-blood and grades, mostly from the flocks above named, reinforced by Vermont rams. In 1860 H. R. Wise had 185 Atwood Merinos, from which he sheared 1,028 pounds of wool.

The oldest recorded flock of Carroll County is that of Joshua Leggett, which was started in 1833 from Pennsylvania Merinos. In 1839 Mr. Leggett purchased a half-blood Saxon ram brought from New York, and in 1845 a full-blood Saxon ram from Samuel Patterson, of Washington County, Pa., which was said to have been bred from a New Jersey flock. This reduced the weight of his clip, but added to its fineness. In 1849 he purchased a half-blood Black-Top, which added to the weight of the fleece, and in 1856 a Spanish Merino ram from Vermont was added, which increased the length of fiber and weight. From this ram he bred others that clipped 10½ pounds, and ewes that clipped from 5 to 7 pounds, washed clean on the sheep. There were very few large flocks in this county until after 1850, and these had for their foundation the sheep of the neighboring counties, and from the border counties of Pennsylvania and Virginia, graded up by the use of Vermont rams.

Harrison County received its fine-wooled sheep from Jefferson and Stark, and from western Pennsylvania, and went through the same early experience of crossing. The Saxons were early introduced and ran the yield of wool to a low figure, and they held their ground and were preferred on account of the fineness and cleanness of their wool as late as 1850, at about which time the tide set in for the Silesian and the Vermont Merino. The experience of most wool-growers of the county can be told in that of one of them. William Eagleson, of Cadiz, bred an excellent flock at an early day. In 1853 his flock was composed entirely of Saxon blood and sheared 2¾ pounds per head. Mr. Eagleson then made two successive crosses with Silesian rams, making his flock run three-fourths Silesian and one-fourth Saxon, raising the weight per fleece up to the minimum of 4 pounds, a gain by crossing with the Silesian of 1¼ pounds per fleece. In 1857 he disposed of that portion of the flock composed of pure Saxon blood, and crossed the grades above men-

tioned with a Spanish Merino ram bred by Edwin Hammond, of Vermont. After this he made his crosses entirely with Spanish Merinos, making his grade flock run three-fourths Spanish Merino, one-sixteenth Saxon, with the remaining three-sixteenths Silesian. This cross brought the weight of his fleeces up to 5¼ pounds in 1861, making an increase of 2½ pounds per fleece in eight years, and he had hopes of reaching 7 pounds by 1865. Besides this Mr. Eagleson had a thoroughbred flock of pure Atwood Spanish Merino blood, bred by Hammond and others of Vermont. Of this variety he had 150 ewes, which averaged 6½ pounds.

The early flocks of Guernsey County were like those of the neighboring counties: first, the common sheep crossed by the Dickinson Merino, then the Saxon, and finally the Spanish Merino, as represented by the Vermont variety. But few records are available concerning these early days. R. H. Wilson began his flock about 1840, with the fine-wooled sheep of western Virginia, probable descendents in great part of the Wells and Dickinson flocks. About 1845 he procured rams from Henry D. Grove's pure Saxon flock, and used them three or four years. Next he used Saxon rams bred by Dr. Chapline, and in 1854 bought a pure Silesian ram and used him two seasons. In 1856 he sold his sheep and began again soon after to breed from some Silesians and some ewes bred direct from the flock of William Brownlee, of Washington County, Pa. Then he introduced Silesian Spanish, bought of William Chamberlain, of New York, and an American Merino bought of George Campbell, of Vermont. Both were heavy-wooled sheep, and his clip of 1861 averaged 3⅞ pounds, but was too fine for the prevailing market. He had that year over 300 sheep. John Moore, of this county, had an earlier flock, founded in 1832 from a purchase made of William Brownlee, of Washington County, Pa., and he had the same stock of ewes in 1861, with a cross by a ram of the Atwood stock, obtained from Judge McKeever, of western Pennsylvania. These flocks represent the character of the Merinos of Guernsey County: the Wells and Dickinson sheep; Saxons, Silesians, and their crosses from western Virginia and Pennsylvania, and thoroughbred Spanish Merinos from Vermont.

Noble and Washington counties, in the lower part of the Muskingum Valley, have not been noted as large fine-wool-growing counties. Their early sheep were of the common kind and their improvement was of slow growth. An early Washington flock was that of Col. John Stone, of Belpre, founded in 1826, by pure Merinos from the Wells flock and kept pure for over half a century.

The first Spanish Merino sheep of Muskingum County were those of the Wells and Dickinson flocks and some from Washington County, Pa. These, however, were soon supplanted by the many Saxony crosses, and not until 1850 did the Spanish Merino regain favor, since which time a majority of the best sheep in the county trace their descent from 100 Jarvis ewes, brought from Vermont by Barnum Sanford, who settled near Newark, Licking County, in 1852, bringing the 100 ewes and 2 rams. The descendants of these ewes, crossed by Atwood rams, were

much sought for and improved neighboring flocks. Most of the full-blood flocks formed since 1855 were from Vermont stock.

A majority of the flocks of Licking County owe their origin to the Wells and Dickinson flock and to Washington County, Pa., crossed at a later day with the Vermont Merino. The tariff of 1824 and 1828 stimulated a great demand for fine wool, and the farmers of the county engaged extensively in growing it, forming fine flocks for the purpose. The compromise tariff of 1832 lessened the demand for wool and many went out of business, and the flocks as well as the quality of the wool deteriorated. Upon the revival of manufactures sheep increased and many new flocks were formed. S. S. Matthews began a flock from the Wells and Dickinson sheep, crossing them with Atwood rams, and had in 1862 the only recorded full-blood flock in the county. There were many flocks formed between 1832 and 1850, among them those of James and J. C. Alward, Lucius Case, Jacob Winter, and John Gurney. Mr. Gurney was a native of Massachusetts, and in 1832 removed to Ohio, where in 1840 he became identified with the pure Merino sheep industry of the State, in which he took much interest. He made frequent purchases from the Vermont breeders, particularly of Edwin Hammond, having purchased in company with Eli Kellar, Newark, Ohio, the entire raising of ram lambs of Mr. Hammond, with few exceptions, for four successive years. In 1833 his flock passed to his son, P. P. Gurney. It is now principally Humphreys and Heaton blood, and is one of the very few early flocks that appear in the Ohio Register. For many years Licking County was the first in wool-growing in the Muskingum Valley and in the State, and the quality of its fine-wool sheep was excellent. In 1862 three-fourths of the wool raised was Merino.

Coshocton County received its first Merinos from Stark County, and its experience with the Saxons was similar to that of other sections of eastern Ohio. Of its later breeders Mr. T. S. Humrickhouse was well known. He began his flock with Ohio Merinos, which he gradually abandoned, and then bred entirely from the Connecticut and Vermont Atwood Merinos. The foundation of his Atwood stock was laid in 1852 by the purchase of 3 ewes from Edwin Hammond, one in 1854 and one in 1856, and one ewe from Stephen Atwood in 1854. He used rams bred by Stephen Atwood and Edwin Hammond, and others of the same blood and also those of his own breeding. In 1876 the flock was still in existence, bred in the pure Atwood-Hammond line, and contained 6 rams and 21 ewes.

Richland, Ashland, and Wayne counties, at the head of the Muskingum Valley, had many superior sheep at an early day, and the vicissitudes in the breeding and in the varieties bred have been similar to those in other parts of the State. Wool-growing was generally profitable. The native sheep were improved by a cross with the Spanish Merino. The small or ordinary sized sheep, of fine wool and long staple, were thought to be the most profitable, such as a cross between the Saxon and the Spanish Merino, and later with the French Merino.

North of the river counties and Muskingum Valley, from the eastern border of the State, halfway westward across it, lies the Western Reserve, settled principally by New England people, who brought with them eastern stock and eastern modes of husbandry. The first improvement on their sheep was made by the Wells and Dickinson sheep and those from Washington County, Pa.

Mahoning County, on the Pennsylvania border, has had a good reputation as a wool-growing county. Its early sheep were those from Pennsylvania and from the Wells and Dickinson flocks. In 1832 John Bingham began a flock by purchases of sheep from Enoch Marvin and John Marshall, of Beaver, Pa. When he commenced the average weight of fleeces was 3 pounds; by judicious crossings with rams of pure blood, he increased the average to 4 pounds. In 1856 he bought a yearling ram of Merrill Bingham, of Vermont. His fleece, of one year's growth, weighed 20¾ pounds. In 1862 his flock of 300 averaged 6 pounds per head washed wool. John Brownlee commenced a flock in 1837, from Black-Top Merino and Saxony sheep, and some common or native sheep. They were then crossed with Saxon rams till the fleeces became very light, say 2½ to 3 pounds. He then bought 2 Spanish Merino rams and 12 ewes from Vermont, and for five years bred from Spanish Merino rams. The result of this cross increased the fleeces to 4 pounds throughout the whole flock. Asa W. Allen, of Ellsworth, had a Vermont flock in 1855, which he substituted for sheep then general in his vicinity, brought from Columbiana County, Ohio, and western Pennsylvania. In 1859 R. M. Montgomery purchased thoroughbred Vermont Merinos and introduced them into the county. Previous to 1855 the Saxons were very numerous in the county, but from that date they declined.

The sheep of Trumbull were similar to those of Mahoning, the common improved by the Ohio and Pennsylvania Merinos, then crossed by the Saxon and then again by the Spanish Merino of Vermont and New York. The history of two full-blood flocks may be given to illustrate the formation of most of them. In 1834 Aaron Griffith bought 31 ewes of Adam Hildenbrand, and in the year following 60 in Washington County, Pa., of the McKeever stock, or the Black-Top Merino. As the flock increased from year to year he selected as breeders those which he considered as the most perfect animals, retaining as much as possible fineness of fiber, and seeking to increase the length of staple and weight of fleece, always upon a good-sized and well-formed sheep. Believing that the Spanish Merino was the most profitable sheep for central Ohio, in the purchase of rams he sought to breed his sheep to conform to that type. N. E. Austin obtained, in 1846, about 500 sheep, the average of Gen. James S. Wadsworth's flock in Livingston County, N. Y., and brought them to his farm in Trumbull County. They were all fine-wooled sheep. He crossed with the Saxons and got very fine, light fleeces of 2½ pounds. As that could not be made profitable, he used Spanish Merino rams and brought the average up to 4½ pounds of wool per head.

Lake and Geauga counties had similar foundations for their fine-wool industry. In the latter, in 1825, Philander Thompson, of Middlefield, began a flock by the purchase of sheep from Stephen Atwood, of Connecticut, which in 1861 numbered 4 rams and 100 full-blooded ewes; and in the same year, 1825, L. H. Bassett, of the same county, began a flock founded on Vermont stock and the Wells and Dickinson sheep. In 1827 F. G. Brown commenced with a small lot of the Wells and Dickinson ewes and a Black-Top ram, and bred in the same flock until he crossed with the French Merino, about 1855. In 1830 William and Reuben Munn, of Newberry, began flocks from full blooded Ohio and Vermont Spanish Merinos, which in 1862 numbered over 560 head, and had done much to distribute superior sheep throughout this fine wool-growing country. Up to the introduction of Thompson's Atwood Merinos the few sheep that were in the county were descendants from the Wells and Dickinson flocks. They were kept as pure as possible for some years and purchases were made in Beaver, Lawrence, and Washington counties, Pa., and Columbiana and Stark, in Ohio, of the choicest sheep to be had, by which the style of wool was improved by the addition of a most beautiful crimp peculiar to the best fine-wool flocks of western Pennsylvania.

In Portage County the fine-wool industry was built up on the common ewes of the country. These were purchased as they could be obtained and crossed with the Dickinson sheep and then with the Saxon, and when the tide turned in favor of the Spanish Merino the flocks were generally one-fourth to one-half Ohio Merino and Saxon, the other part of blood being mixed. Vermont rams were used for breeding, carefully selected in regard to health and endurance and in reference to weight and fineness of fleece. The sheep were generally housed in winter and fed all the hay they would eat, with a little grain. They were allowed to run out in small lots during the day, with free access to water, and when well taken care of they improved in build and weight of fleece. The fine wool stock of Summit County came from Washington County, Pa., and from Jefferson County, Ohio. Vermont Merinos were afterwards introduced, and these grades, in their purity and in their crosses with some of the native blood, formed nearly the entire stock of the county about 1860. Cuyahoga was also a fine-wool growing county at an early day, and among its flocks was one of 50 rams and 75 ewes descended from the Montarco importation of Jonathan Allen, of Massachusetts, in October, 1810. Wool was the principal source of income of the farmers, and so continued until about 1855 to 1860, when the coarse-wooled mutton sheep supplanted many of the fine-wooled flocks. Loraine County owes its first fine-wooled sheep to the neighboring counties, and the renovation of the flocks after the Saxon crosses is due to Joseph W. Worcester, who, in 1847, imported the first Connecticut and Vermont Merinos into the county and bred them for many years, making yearly importations. In 1863 nearly all the fine-wooled flocks of the county

traced their foundation to the Worcester flock. Most of the Merino flocks of Medina County were started on the coarse-wooled sheep by Dickinson and Saxon rams and then crossed by Vermont rams at a later day. There was a great variety in the sheep, but the wool was superior, due in a measure to the introduction into the county of a portion of the Saxon flock of Henry D. Grove, of New York. Erie County derived its fine-wooled sheep from Vermont, principally, Vermont rams being extensively used after 1847 to cross on the mixed grades then known to the growers. In 1850 the wool ranged about one-quarter blood and averaged about 3 pounds per head. From that time great improvement was made. Vermont rams were brought in extensively and many purchases were made of Mr. Worcester, of Loraine County. The leading improver on the sheep of Huron County was D. C. Jefferson. In 1849 he purchased of Erastus Robinson, of Shoreham, Vermont, 14 Spanish Merino ewes and 2 rams, from which he bred a flock by crossing with the best Spanish Merino rams he could get from the Hammond and other flocks. In 1855 and 1856 he introduced a French Merino ram into his flock, very sparingly, however, for he had but little faith. The result was 13 ewe lambs, half French, averaged first fleece, $4\frac{1}{16}$ pounds, and 28 Spanish ewe lambs, thoroughbred, averaged per head, the first fleece, 5 pounds and a small fraction, showing 15 ounces in favor of the Spanish. He tried other varieties, but without success, and came to the conclusion that the nearer he could arrive at thoroughbred Spanish Merino sheep the more pounds of wool he could get and of a better quality. Between 1855 and 1861 his flock of 100 breeding ewes paid him annually $800 to $1,000, and his testimony was that the best rams for Ohio were those from Vermont blood. Owen Jefferson formed a flock in 1850, from the Robinson Vermont stock, and other flocks succeeded, founded on Vermont purchases or those made from the Jefferson flocks. In 1860 the average amount of wool per head of the Erie and Huron sheep was 3 pounds. The great improvement made in 20 years is shown in the increased weight of fleeces. In 1845 the average weight of the fleeces on the Western Reserve was $2\frac{1}{2}$ pounds; in 1865 it was $4\frac{1}{2}$ to $4\frac{3}{4}$ pounds, some counties running up to nearly 6 pounds.

In 1864 S. W. Thomas, of Greenwich, Huron County, laid the foundation of his celebrated flock by purchasing 2 ewes bred by C. W. Mason, of Vermont, to which addition was made in 1865–'66 of 12 ewes bred by C. D. Lane, Vermont; in 1866 11 ewes from Horace Phinney, who purchased from S. S. Andrews, Vermont, and in 1871 6 ewes bred by L. P. Clark. He made many other purchases of Vermont ewes and rams and constantly added the best to be found until in 1884 he had a choice flock of 91 rams and 320 ewes. The sales from this flock were large, both of rams and ewes, and found purchasers in many parts of the State.

The Hocking Valley, though not large in extent, is an excellent sheep country and has had some fine flocks. The range of hills or highlands,

running parallel with the Ohio River on the southern border, comprising some 6,000,000 acres, presents as inviting a field for sheep husbandry as any in the Union, and the southern part of this valley lies in this favored district. Athens County, on the Ohio, is among the first in the State for the quality of its sheep, and much attention has been paid to the growth of wool. About 1822 Abel Glazier and others obtained some Spanish Merinos of William Skinner, of Marietta, Washington County, and the stock from these flocks had a wide dissemination. All the flocks of the county up to 1850 had an admixture of the Wells and Dickinson stock. In 1850 there was a movement in favor of the Vermont Merinos, and many of them were introduced and new flocks formed. Gallia County owes its first fine-wool sheep to a ram brought from the East in 1818 by Samuel Barlow. From this ram and the common sheep of the country many flocks were formed, some of which were in existence at a late day. In 1845 the sheep of the country were generally a cross of Merino and Saxon. The business of wool-growing then declined, and in 1852 but few were engaged strictly in it. Every farmer had his flock, and many had those of the best crosses of the Merinos and Southdowns and other good stocks, and all sold wool. Some extensive woolen factories in the vicinity made fabrics for home consumption, for which much of the wool was exchanged. The sheep of Perry County were those of other parts of Ohio and of Western Pennsylvania, the earliest recorded Merino flock being that of Aaron Johnson, founded in 1823, from Western Pennsylvania and Virginia stock. In 1850 about one-third the wool was of good quality, and improvement began by the introduction of some Saxon and Spanish Merinos. Hocking County got its fine wool almost entirely from Pennsylvania and the Vermont Merino came in about 1849. Fairfield County owes its first fine-wooled sheep to the Wells and Dickinson flocks. In 1847 Samuel Low, of East Rushville, purchased of Adam Hildenbrand, of Stark County, some of his best sheep and began a full-blood flock, which in 1862 numbered 110, giving on an average 4¾ pounds well-washed wool. In a great part of this valley half the wool grown is manufactured at home or exchanged for cloth, and for this purpose the long wool has been preferred as being more readily spun than the Merino grades.

The sheep of the Scioto Valley were driven from the eastern counties and from Pennsylvania, and were of all grades of Dickinson, Merino, Saxon, French, and common sheep. Wool-growing was a good business, yet not enough was raised for home use and to supply some of the early woolen factories. All the farmers kept a few sheep, and systematic improvement did not begin until about 1850, when some Vermont Merinos were used to increase the weight of fleece of the prevalent Saxon grades. One of the best pure-blood flocks, though of a late date, was that of Minor Tone, of Delaware County, who, in 1861, went to the farm of Stephen Atwood, in Connecticut, and purchased 20 ewes from

his celebrated flock and took them to his farm, forming the basis of his flock. Mr. Tone was among the first to engage in this industry in the State of that strain of blood, and the first in the part of the State where he lived. At a later day he added other Atwood sheep to his flock from the flocks of Henry Lane, W. R. Sanford, and Henry W. Hammond, of Vermont. This flock became noted throughout the larger portion of the State, and still exists, the property of R. K. Willis, to whom it descended upon Mr. Tone's death in 1877. In 1850 the wool of Marion County averaged 2⅞ pounds per sheep, and the Merino blood constituted three-fourths of that grown.

The Western Reserve and the valleys of the Muskingum, the Hocking, and the Scioto comprise a little more than the eastern half of the State, carry more than three-fourths of the sheep, and raise the best wool. The wool grown in the hilly regions of eastern Ohio was found at an early day livelier and possessing the felting qualities necessary for forming good cloth in a higher degree than that produced in other parts of the United States, and experience proved that fleeces grown upon the identical sheep brought from the seaboard improved in quality at least one grade. This was accounted for by the sheep feeding on the sweet grasses grown on the limestone soil of the hills, yielding a superior article of wool. While the northeast and river counties raise the best wool and had the earlier sheep, the southern and middle counties and some of the western contain many sheep of great excellence and grow wool of fine quality.

The fine-wooled sheep of Adams and Brown came from Washington County, Pa. In 1849, some 500 or 600 Spanish Merino grades were driven into Adams, and in the same year many of these were taken into the adjoining county of Brown, where some full-blood flocks were formed, first of which was that of J. R. and A. J. Patterson, owned in 1873 by John L. Summers. Clinton County was noted for many years for fine sheep, and William Linton was the pioneer in raising them from the selections he made at an early day from the Wells and Dickinson flocks. He maintained his flock at a high standard, and from it many more were formed. In 1850 there were mixed and unmixed flocks of Saxons, Spanish Merinos, French Merinos, and Southdowns, and the wool of the county was rated as fair. Warren County, immediately on the west, presents a counterpart to Clinton. The early fine-wool sheep were those of the Wells and Dickinson flocks and of Washington County, Pa., and in 1848 there were Merinos of all grades and Southdowns in the county. The French Merino was introduced by L. G. Collins, but was not popular. In 1850 the wool averaged 3¼ pounds per head. The Shakers, at Lebanon, had the most valuable Spanish and Saxony Merinos in 1854, which they improved with great care. Butler County had one or two Merino flocks prior to 1820, but the fine-wool industry never prospered. A few, and but a few, appreciated the value of having a better grade of wool than that furnished by the

common sheep, and hence the introduction of the Merino blood was very limited. New breeds of sheep were sparingly introduced, some Southdowns as early as 1830, and subsequently Leicesters, Cotswolds, and their crosses were seen. The nearness to the Cincinnati market induced farmers to give more attention to sheep esteemed to be best for mutton, quality and quantity considered. Green County had but few of the early fine-wooled sheep, the great mass of the sheep, as late as 1850, being the common stock of the country, with slight crossing of Saxon and Spanish Merinos, the wool clipping about 3 pounds. In 1812 or 1813, when the cross on the native ewe by the Spanish ram was the almost universal way of forming a fine-wool flock, such a flock was started in Clark County, which was owned by Seth Smith in 1862. The first cross was the Spanish Merino, then after several year's crosses in-and-in with the Saxony, then with the Vermont Merino. W. N. Chamberlin formed a pure Vermont flock in 1855. At that time wool-growing was an extensive industry in the county, and the flocks were about one-third Saxon and grades, one-third Spanish Merino and grades, and one-third common sheep. The wool clip averaged 3¼ pounds per head. Miami County had one of the early Spanish flocks. In 1813 Zimri Heald brought some Merinos from Vermont, and the flock founded thus was kept up for more than half a century, and gave its blood to a great extent of country. In 1831 B. F. Brown, of Piqua, began a flock, the original blood of which was said to have come from Kentucky. The subsequent flocks of the county were from all sources, Ohio, Pennsylvania, and Vermont, and in 1854 presented a great mixture. There were many small flocks of fine Saxony and Spanish Merinos worth $2.50 to $3 per head; wool was worth 50 cents, and the French Merino had just been introduced. Darke County, as late as 1862, had but few sheep of any kind. Half of the farmers kept no sheep; the other half kept from 5 or 10 to 20 head of the common stock of coarse-wooled, a little mixed with Merino blood. Logan County, prior to 1842, paid but little attention to the growing of wool, as that article was not exported from the county. About that time, or in 1843, Joseph Lawrence brought to the county the first and only flock of any considerable size of Merino sheep, mostly of the first quality. This flock was brought from Jefferson County, where the wool industry had been carried on for many years with great success. Shortly after this many flocks were brought from Washington County, Pa. About the same time some Vermont Merinos were brought into the county, and in after years the French Merino was crossed to some extent. But the greatest part of the Merino stock was the "Black-Top." That sheep was found the most profitable that could be raised and the best for the climate. It was more hardy than the common Merino, a sheep that could not endure the winter so well nor rear lambs so successfully in that climate. The wool of the Black-Top was equally fine, more abundant, and presented a black gummy appearance on the exterior of the fleece;

hence the name. In 1856 the sheep of the county were rated at one-third full-blood Merino, one-third half-blood, and one-third quarter-blood, and common coarse-wooled, including a few Saxony and Leicester sheep.

The sheep of that northwestern part of the State and in the central counties embraced in the Maumee Valley have a varied origin. The fine wools of Shelby were built up on the coarse-wooled sheep. The first improvement came from the eastern counties of the State and from Pennslyvania. In 1845 Curtis Kelsey introduced the Vermont Merino and began the formation of a flock that continued many years, and in 1847 Isaac Fulton introduced Vermont Merinos from the flock of Sheldon and Law. From 1848 to 1860 the formation of full-blood flocks from Vermont stock was continuous and woolgrowing on the increase. In Hardin County but little wool was generally grown beyond what was needed for domestic purposes, and its sheep, as well as those of Allen on the west, were derived from the eastern counties. The common breeds in 1850 were the Saxony and the Spanish Merino and a cross between these two and crosses on the common sheep. About 1860 some Black-Top Merinos were introduced from Logan County. Hancock, Putnam, and Paulding can be classed with Hardin and Allen, the wool in 1850 averaging about half-blood Merino. Defiance County, in the northwest corner of the State, did not give early attention to wool-growing for market. The sheep up to 1840 were of the common kind, natives and low grades of all kinds, furnishing coarse wool for domestic use. A little later, when a better article was needed for domestic use, an occasional farmer would buy as full-blooded a Merino ram as he could find and his purse allow and put him with the flock and hire him to his neighbor, and in this way the flocks were gradually improved. In 1852 some Vermont rams were brought in, and in 1856 and 1857 Stephen Benton brought in some more Vermont rams, from which came a class of sheep the rams of which sheared 8 to 12 pounds and the ewes 4 to 6 pounds washed wool. In 1863 there was but one full-blood breeding flock in the county, but there were many fine-wooled sheep.

Seneca County, in the middle upper part of the Maumee Valley, had some of the choicest flocks of the State at an early day. The earliest was that of Thomas J. Baker, brought from New York in 1826. This flock was originated in 1809 and 1810 by a purchase made by Samuel Baker, of Steuben County, N. Y., of some sheep from Judge Hopkins, of Livingston County, these sheep being direct and immediate descendants of the Humphreys importation. In 1863 the flock was still in existence, numbering over 300, and had for the few years preceding been bred to Hammond Vermont rams. A branch of this flock was that of A. C. Baker, Reed, Seneca County. William Baker, his father, son of the Samuel Baker above mentioned, had some of the Humphreys Merinos, and in 1828 purchased of a Mr. Marsh, of Cayuga County, N. Y., several

imported Saxony rams. These rams they bred from for a number of years until they had nearly ruined his flock, which meanwhile had been removed to Ohio. More than thirty years' careful breeding with the best Spanish Merino rams failed to entirely eradicate the Saxon blood, a streak of that cross occasionally cropping out in the flock. C. G. Brundage, in 1847, started a flock by the use of ewes brought from the Baker flock in New York and rams from the Ohio flock of A. C. Baker. William Randall formed a fine-wooled flock in 1835, E. Jones, jr., in 1827, E. Dorsey in 1837, Daniel Brown in 1839, and Basil Norris, William Amory, and Robert Phaw in 1840. From this time to 1860 there were many flocks formed from these already established in the county and by importations from New York and Vermont. Of the latter it was said that many were sold from 1857 to 1862, some of them good sheep, but most of them no improvement on the old stock and in many instances decidedly not so good.

Wyandot County lies directly south of Seneca, and its flocks were originally made up of sheep driven in from Huron, Seneca, Lorain, Medina, Portage, Stark, Richland, and Knox counties, of all grades, from the fine Spanish Merino down to the long, coarse wools, and they so continued until the Pennsylvania, New York, and Vermont Merinos came in from 1850 to 1856, and in 1860 the wool was classed as mostly Merino and mixed. Crawford County adjoins Wyandot on the east, and began its fine-wool growing by the improvement of the common sheep. Dickinson rams and those from western Pennsylvania, called "Fairtop" Merinos and Saxon grades, were used until 1850, when a great deterioration of the fleece was seen, to correct which the Vermont Merino came in, followed in 1852 to 1854 by the French Merino. The French Merino was soon abandoned; they were too tall and too lengthy, and too hard to keep. Wood County, northwest of Seneca and Wyandot, gave an average yield per head in 1850 of but 2½ pounds of wool.

Fulton County adjoins the State of Michigan. The first sheep came into the county about 1840, a few bony-legged natives and grades of Saxony and Spanish Merinos, from the interior counties of the State. About 1850 William Sutton introduced some Spanish Merino rams from New York, and about 1852 or 1853 several lots of French and Spanish Merinos were brought in, which improved the quality of wool to a great extent. The increase in the number of sheep was not rapid until 1860, at which time there were but few flocks of fine-wool sheep in the county, and in 1863, though the number had doubled since 1858, but few flocks numbered more than 100 and but four exceeded 400. But a fourth of the farmers kept sheep, and most of these not over 25 to 40 in a flock. But from 1863 greater interest was excited not only here, but in every part of the State.

But two of the flocks herein mentioned find notice in the Ohio Register. Previous to 1860 there was not much attention paid to the pedigree, and, we may add, to the purity of the sheep. New flocks were now formed and some of them have preserved their record.

HAINES, DEL.

"KING, JR.," OR "F. S. HIGBEE," No. 118 (No. 630).

FROM "REGISTER OF THE OHIO SPANISH MERINO SHEEP BREEDERS' ASSOCIATION," VOL. I, 1868.

In September, 1860, J. G. Armstrong, of Licking County, commenced a flock by the purchase of 4 ewes from W. R. Remele, Vermont, and in November of 12 ewes from Henry Giddings, Fairfax, Vt. He used rams from the flocks of Edwin Hammond, Eli Keller, and one bred in his own flock, and added ewes to the flock by purchases of the best Vermont and Ohio blood. In 1861 Columbus Delano, of Knox County, founded a flock by purchasing a number of ewes from J. T. and Virtulan Rich, E. Sanford, N. A. Saxton, and Edwin Hammond, of Vermont, and rams from the flocks of W. R. Sanford and S. S. Rockwell, of Vermont. Additions were made by other ewes from Vermont, and the use of the best rams of Vermont, Ohio, and those bred in the flock until it is now one of the best flocks of the State. Of the same county is the flock of James M. Bebout, founded in 1864 by E. S. Bebout, who purchased 23 ewes from J. E. Parker, of Whiting, Vt., and 5 more of the same blood. Other ewes were added and a ram bred by Victor Wright, Vermont, used on the flock, and also rams raised by Mr. Delano. The flock is of Humphreys, Heaton, and Jarvis blood. In 1887 it numbered 27 rams and 65 ewes. Another Knox County flock is that owned by Giddings and Dally, which was commenced by Mr. Giddings in 1857 by the purchase of 5 ewes from Victor Wright, Vermont. In 1858 13 ewes were purchased from Mr. Wright, and again in 1859 5 more, for which it was said Mr. Wright had paid the sum of $5,500. From 1860 to 1874 other ewes were purchased from the very best flocks, and rams were used well known as the best Vermont has produced, embracing such names as Blacktop, Wrinkley, Long Wool, Patrick Henry, and Fremont. During the years 1874 and 1875 the flock was moved to Ohio, and an interest in it purchased by John Ogilvie, of Croton. Two of the celebrated J. T. Stickney Centennial ewes were purchased in 1878. In 1880 the partnership between Giddings and Ogilvie was dissolved by an equal division of the flock and Mr. Giddings went into partnership with Mr. E. Dally, to whom had been sold 17 ewes in 1875. In 1884 the flock consisted of 91 rams and 397 ewes. These three flocks of Mr. Delano, Mr. Bebout, and Messrs. Giddings and Dally have done very much to improve the sheep of Knox and adjoining counties.

In 1863 S. S. Campbell, of Harrison County, laid the foundation of a flock by the purchase of 3 young ewes of S. G. Holyoke & Sons, St. Albans, Vt., and 2 ewes of James Slocum, Brownsville, Pa. In 1864 2 ewes, and in 1865 1 ewe, of Edwin Hammond were bought. Rams were used that were bred by Mr. Hammond and their descendants. The flock became one of the most noted of Ohio.

In 1863 F. S. Higbee, of Licking County, founded a flock by purchasing 1 ewe from Almon Lawrence and 1 ewe from William Gage, of Vermont. In 1866 10 ewes were purchased from Almon Lawrence, who had founded his flock by purchasing 17 ewes from Edwin Hammond. In succeeding years Mr. Higbee made purchases from German Cutting, Lyman P. Clark, Henry C. Burwell, George Hammond, and others, of

Vermont, and used Vermont rams and those bred within the fl
This flock is still in existence. John J. Deeds, also of Licking Cou
commenced a flock in 1864 by purchasing 4 ewes of John T. Evans
Newark, Ohio, which ewes were direct descendants from rams and e
purchased by Mr. Evans from F. H. Dean, Vermont, in 1860. In 1
D. H. Peters, of the same county, began a flock by the purchase o
ewes from F. and L. E. Moore and 2 from Dr. Ketchum. In 186
were purchased from D. Giddings. The rams used were from the V
tor Wright flock. All were choice Vermont Merinos. H. R. Pumph
laid the foundation of another Licking County flock in 1865, by
purchase of ewes bred by Victor Wright and Edwin Hammond,
Vermont, and using Mr. Wright's celebrated ram Long Wool. T
flock of C. Newell Alward, of Licking County, was commenced Octob
1866, by a purchase of 3 ewes of Atwood and Jarvis blood of S.
Matthews, that were bred by George Campbell, of Westminster, V
On the Campbell ewes was used a ram that was sired by E. Kelle
Nub. His dam was bred by Edwin Hammond. The best Vermo
Merino blood was introduced into Licking County by these five flock
and still exists there.

In 1863 Erastus Campbell, of Lorain County, purchased of J. T. a
V. Rich, Vermont, 8 pure-bred Merino ewes, and of C. S. Rumsey,
Vermont, 2 pure-bred Atwood rams. In 1864 he purchased 5 ewes br
by S. Fields, of Castleton, Vt., of Rich blood. In 1865 he purchased
ewe of J. S. Benedict, of Vermont, and of C. S. Rumsey 10 ewes, f
which he paid $1,025. At the same time he purchased a ram bred
Mr. Benedict and a pure-bred Atwood ram of Lyman Webster. In 18
he still further increased his stock of Vermont Merinos by other pu
chases of Mr. Benedict of rams and ewes, 23 pure-bred Atwood ewes
William Root, and 15 pure-bred ewes of Dewitt Taylor. Subseque
additions were made and a first-class flock established. In 1863 Mr.
French, of Wellington, purchased of Zebulon Jones, of East Hubbar
ton, Vt., 2 ewes, for which he paid $100. These ewes were descendan
of a purchase made by Nazaro Northrop, of Royal Turrill, and we
bred in the fall of 1862 to a ram owned by Mr. Hinds, of Vermont. M
R. M. Close, of Oberlin, Ohio, purchased his choice of these ewes, fro
which he continued to breed and founded his flock. The rams use
were Campbell's Vermont Chief and others of Vermont blood.

In 1865 E. J. Condit, of Delaware County, laid the foundation of
flock from purchases of Henry Lane, Cornwall, Vt., and Eli Kelle
Newark, Ohio, and subsequent purchases from Mrs. Keller and Jaco
H. Keller, and also including a small number of ewes in 1875 of L. J
Orcutt, Cummington, Mass., of the Hammond flock, and using rams o
Edwin Hammond, Eli Keller, and those of his own breeding. In 187
the flock had grown to 3 rams and 19 ewes of pure Humphreys sheep
and 3 rams and 13 ewes descendants of and bred to combine the blood
of the Cock, Jarvis, and Humphreys flocks.

HAINES, DEL.

MERINO RAM "NOBBY TOM."

FROM "REGISTER OF THE OHIO SPANISH MERINO SHEEP BREEDERS' ASSOCIATION."

G. W. Sandborne, of Guernsey County, founded a flock in 1865 by purchasing a few ewes from James E. Daniels, of Antrim, Ohio, 5 of which were bred by Charles Lane, and sold for $350 each; 2 were bred by Milo Ellsworth. In December, 1866, 5 ewes were purchased, bred by S. S. Brigham, Vermont. These were Humphreys and Heaton blood. Other purchases were made of Humphreys and Heaton blood, which largely predominates in the flock.

The flock of Zimri H. French, of Shelby County, was commenced in 1867 by purchasing 2 ewes bred by R. P. Hall, of Vermont. The sum of $100 each was paid for these ewes. They were traceable to the Humphreys and Heaton importations. The rams used were first from Vermont and then those bred in Ohio from Vermont stock.

Elza H. Palmer, of Washington County, founded his flock in 1866 by the purchase of 15 ewes from John Skinner, of Perry County. Three of these ewes were sired by a ram bred by H. Hall and sired by Hammond's celebrated Sweepstakes; 12 were sired by "the $500 ram," which in turn was sired by Dean's Little Wrinkley, whose sire was Sweepstakes. Mr. Skinner purchased the foundation of his flock in 1857, consisting of 10 ewes from the flock of David and German Cutting, of Vermont, and 1 ram, bred by F. H. Dean and sired by the noted Wrinkly. In the fall of 1862 Mr. Skinner added to his purchase 8 ewes from the flock of S. S. Rockwell, of Vermont. Mr. Palmer's flock descended from these purchases of Mr. Skinner, and contained a mixture of Humphreys, Jarvis, and Heaton blood.

One of the oldest pure-bred flocks of Ohio is that of Daniel C. Boyer, of Crawford County, commenced in February, 1863, by a purchase of 6 ewes bred by F. L. Upham, Weathersfield, Vt. About the same time 20 ewes were purchased in Vermont, mostly of Humphreys blood; 13 ewes were then purchased from H. C. Sessions; 1 ewe from F. D. Barton, and 1 ewe from Hubbard Potter. All were of Humphreys and Heaton stock. In the same month 16 ewes were purchased of the Rich blood, and later in the year 10 ewes, the selection of the flocks of Victor Wright, Deacon James, and Jerome Benedict, of Vermont. Early in 1864 10 ewes were purchased from R. R. Wright, of Vermont, descendants direct from the flocks of Deacon Gregory and Victor Wright. In September, 1863, Stowell's Sweepstakes was purchased. The price paid for this ram was $1,200. He was of Humphreys and Heaton blood, and was awarded the first premium at the Vermont State fair of 1863. He was used on the flock for many years, together with rams bred within the flock, until about 1873, when a purchase was made of 2 rams from Wesley Robinson, Havana, Ohio. One of these rams was bred by L. P. Clark, Vermont; the other by J. T. and V. Rich. These, with rams bred within the flock, were used until 1881, when a purchase of the ram Nobby Tom was made. From the flock of Mr. Boyer a purchase was made of 5 ewes in November, 1869, by Joseph H. Beard, which was the foundation of his flock. Mr. Beard was a partner in the purchase of Nobby Tom, and he used the same in his flock.

In 1869 Jacob Morrow, of Licking County, founded a flock by the purchase of 9 ewes from Jacob Winter, of the same county. These ewes were bred in Vermont; 8 by George Campbell and 1 by Edwin Hammond. The ram used was bred by Edwin Hammond.

Many other flocks were formed from 1863 to 1869; some of them were dispersed after the fall in wool in 1865; some held on a short time afterwards, while others became so mixed with baser blood that they lost their distinctive character of Spanish Merino sheep. The many pure-bred flocks, raised almost exclusively for breeding purposes, served as the foundation for many high-grade flocks of great excellence. A superior class of grades was raised by taking the common old-fashioned ewes of the country of no particular breed or characteristics, and crossing with the oily, heavy-shearing, well-developed Vermont Merino ram, and following up the offspring with a cross of the same character. By two or three such crosses a good, square built, heavy shearing sheep was produced about as profitable for the average farmer as the full-blooded Merino.

The introduction of the full-blooded Saxony Merino into Ohio is not definitely known, but it was soon after their first importation into the United States in 1825–'26, and their dissemination was rapid, especially after the tariff act of 1828. Wells and Dickinson finally encouraged the breeding of them, and nearly all the Spanish Merino and common flocks of the State were crossed by them or their grade descendants. The stocks were obtained from Vermont, Connecticut, New York, and western Pennsylvania, and in a few cases from the flock of Mark R. Cockrell, of Tennessee. The breaking up of the Wells and Dickinson flocks in 1829–'30 scattered some of the high grades throughout eastern and northern Ohio. In 1830 William Anway, of Seneca County, introduced some full-bloods from the flock of Henry D. Grove, Hoosick, N. Y., which was bred nearly pure as late as 1860, when it numbered nearly 700. J. Baker, of the same county, and at about the same time, introduced them from New York, and in 1836 E. Y. Stickney introduced them from Vermont. Many large flocks in Seneca and adjoining counties owed their foundation to these flocks. In 1830 W. R. Putnam, of Marietta, Washington County, began a flock by purchases in western Pennsylvania, and in the same year B. Dana, of the same county, started a flock from the western Pennsylvania stock, which flock was bred entirely from Saxon rams until 1859, when it was crossed with the Silesian Merino. These flocks and other direct purchases from western Pennsylvania and Jefferson County laid the foundation of numerous full-blood and grade flocks in southeastern Ohio. In 1883 T. Raley, of Columbiana County, brought a small flock from New York and added to it by purchases of the Washington County, Pa., stock. Joseph Rogers, of the same county, introduced some from New York, and in 1838 N. H. Armstrong, also of Columbiana, started a flock by purchases in Dutchess County, N. Y. But the choicest flock of Columbiana was that of John Hisey, started in 1850. They were imported from Baron

Spreck's flock of Saxonies in 1849, by Charles B. Smith, of Wolcottville, Conn., and were bred in-and-in for ten years, and were then considered better than the original sheep when imported. This flock and that of Mr. Armstrong were still pure-bred sheep in 1863, and from them the flocks of Columbiana were freely and generously crossed. In 1834 a full-blooded flock was founded by Henry T. Kirtland, of Mahoning County. The foundation was 2 rams and 12 ewes brought from Dutchess County, N. Y., by Cope and Marsh, of Columbiana County. Frequent additions were made from the flocks of Henry D. Grove, of New York; Samuel Patterson and Samuel Cole, Washington County, Pa.; Mark R. Cockrell, Tennessee; Charles B. Smith, of Connecticut; Perkins and Brown, Akron, Ohio, and from other Ohio flocks. Perkins and Brown obtained their Saxons from the flocks of Samuel Whitman, Connecticut; Col. Jenison, Walpole, N. H.; and of Frederick Brandt, Carroll County, Ohio, who brought over his sheep in company with Henry D. Grove. Their mixed-blooded Saxons were selected from the best flocks of Washington and Beaver, in Pennsylvania, from the counties of Brooke and Ohio, in Virginia, and from Columbiana and Stark, in Ohio. In 1845 the full-blooded and mixed Saxon flocks numbered 1,300 head. At that time no more than 59 pounds of wool had ever been taken from 20 head of the flock. In 1840 Hugh Elliott, of Auglaize, formed a flock from the Saxons of western Pennsylvania, and in 1843 Isaac C. Hull, of Perry County, founded a flock from Pennsylvania ewes and used full-blood rams from New York. John S. Hull formed a full-blood flock four years later. In 1848 Alva Udall, of Portage County, obtained from S. B. Crocker, Oneida County, N. Y., the foundation of a full-blooded flock, which he continued to breed pure and in such manner as to secure a good constitution, short legs, round compact body, full breast, and in time they became a hardy sheep. Mr. Udall sheared of clean washed wool, on the average, 3 pounds, the flock through. In 1862 he crossed the ewes with Silesian rams, obtained from W. H. Ladd, of Jefferson County, with a view of increasing weight of fleece, without essentially increasing the size of fiber. In Harrison County Samuel P. Johnson formed a Saxon flock which, in 1851, numbered over 400. In the year named he moved from Harrison to Logan, taking with him 100 of the choicest ewes of the flock. To these he added 30 ewes from the flock of Samuel Patterson, Washington County, Pa. Up to 1856 he bred chiefly from rams he had brought with him from Harrison County. Convinced from his experience that the Spanish Merinos were the best, he obtained a Hammond ram from Vermont and changed his flock to Spanish Merinos, averaging in 1862 4½ pounds well-washed wool. A later Saxon flock was that of William Croskey, also of Harrison County. Mr. Croskey considered his sheep the hardiest that were bred in Ohio, Pennsylvania, and the West Virginia region, and the wool paying as well as any other. His fleeces averaged 3¾ pounds, and sold straight through in 1876 for 65 cents a pound. One of his rams died at the age of 22 years. He did not house his sheep; some of them had

access to sheds, but they were just as apt to select the highest knoll of a cold night as any other place. He thought there were no hardier sheep—no sheep better adapted to the climate where the thermometer gets down as low as 25 degrees below zero and up to 100 degrees in the shade nearly every year. He had not so much trouble in yeaning time as some of his neighbors who raised Spanish or American Merinos. A portion of Henry D. Grove's New York flock was taken to Medina in 1837.

The few flocks here mentioned indicate only the wide distribution of the Saxon; to enumerate more would be superfluous. From 1835 to 1845 they overran the State and became the predominant sheep, and they held their position for many years, and flocks were still formed as late as 1860. From 1845 to 1850 a reaction set in and breeders and wool-growers crossed with the Spanish and the French Merino. The Saxons had reduced the fleece of most flocks to 3 and 3¼ pounds, fine wool it is true, but the difference in price did not compensate for the loss of weight. The French Merino was imported into the United States as early as 1840, and shortly after some specimens found their way into Ohio, and there was a great rush to cross these large, heavy-fleeced sheep on the smaller Saxon to increase the wool. These crosses were common all over the State as soon as full-blooded French Merinos or high grades could be obtained. Consequently, several varieties of Merinos were known; the French and Saxon cross, French and Spanish cross, Saxon and Spanish cross, and everything intermediate and of every conceivable grade. The French Merino was also crossed on the common sheep, and the result was thought by some to produce the most profit. They had little or no foot-rot, gave a medium grade of wool, with heavy fleece, say from 5 to 8 pounds, and were excellent for fattening. The wool was not quite as fine as the full-blood French or Spanish, but for domestic use it was better, and the sheep were very hardy and stood the winter better than the common sheep.

The French cross on the Pennsylvania Black-Top Merino was very successful, and the few flocks where it was carefully pursued showed some fine sheep and excellent wool, and the wool was preferred by purchasers because it showed less shrinkage. It was found, however, that the Spanish Merino was, upon the whole, superior to the French, and the latter was soon abandoned. For a while the Silesians met with some encouragement, but they, too, were found inferior to the Spanish Merino.

William H. Ladd, of Jefferson County, imported some pure-bred Silesians or Infantado-Negretti in 1854, which he disposed of but sparingly at $250 to $300 each. In 1865 he sold the original importation and their descendants, and a few crosses with other families of Spanish sheep. The ewes averaged $100 each.

In 1870 there was a general feeling that for fine wool-growing purposes there was no animal that excelled the Spanish Merino and its outcome, the American Merino; and from that time they have been the

fine wool sheep of the State. The Saxony, French, and Silesian Merinos have yielded to them. In the northern part oft he State the Vermont-Atwood more generally prevails; in the southeastern the Delaine type, as represented by the Dickinson sheep, and the Black-Top and Delaine flocks of western Pennsylvania.

The tariff acts of 1824 and 1828 were great incentives to wool-growing in Ohio. These measures, passed at a time when emigration to the State was very large, decided the occupation of many new settlers, who took their flocks with them. For many years the business was a good one, though prices of wool fluctuated. Whenever wool reaches a certain minimum price, the pelt, carcass, and tallow are worth more for slaughtering than the animal is for its fleece; and this condition existed among the Ohio and other western wool-growers in 1842, 1843, 1844, and 1845, and up to 1853. For more than ten years wool was extremely low. Fine Ohio wool that brought in New York markets 70 cents per pound in 1831, 70 cents in 1837, 56 cents in 1839, and 52 cents in 1841, fell to 48 cents in 1842, and 35 cents in 1843. In the same period medium wool declined from 60 to 30 cents and coarse wool from 48 to 25 cents. The average of fine, medium, and coarse was 30 cents in New York and not to exceed 26 cents on the Ohio farm. With an average of 3 pounds of wool per head the grower realized but 78 cents for his fleece. In 1841 some firms at Cleveland, Ohio, began the manufacture of oil, tallow, and stearine candles from the carcasses of hogs and cattle, and sheep were used in considerable numbers. In 1845 a firm at Sandusky slaughtered 5,100 sheep, which yielded an average of about 9 pounds of tallow each. The whole carcass was boiled up except the hams. The tallow sold at 6 cents a pound, and the pelts, mostly of wethers, with 3½ pounds of wool each, were sold for the Eastern market at $1.15. The same year Mr. Charles Hollister, of Huron, slaughtered 3,800 sheep, averaging about 7½ pounds of tallow each. At Cleveland about 50,000 sheep were slaughtered for tallow in 1845, although wool was then worth 33 cents per pound, on an average. The temporary advance in wool for 1845 checked the slaughter of sheep for tallow, but not until many thousands had been so disposed of and their carcasses fed to the hogs, which in turn went through the same process to furnish lard.

The slaughter of sheep for their tallow was a great blessing to Ohio. Those which were sent to the rendering vat were the culls, wethers, and most worthless sheep of the country, nearly all of them suffering with foot-rot or other diseases. There was a thorough weeding out of flocks and a renovation. At the same time there was a steady increase from the East and from Pennsylvania. New flocks were formed and the number of sheep increased very rapidly.

The United States census for 1840 reported Ohio as having 2,028,401 sheep, yielding 3,685,315 pounds of wool. In 1847 the sheep numbered 3,677,171, an increase of over 80 per cent. The average amount of

wool per head was 2½ pounds, well washed. There was an increase to 3,942,929 sheep in 1850, yielding 10,196,371 pounds of wool. The increase continued until the maximum was reached in 1854, when the number of sheep registered 4,845,189. Various causes have been assigned for the rapid decline that now began. In many sections of the State it was the dogs. In other sections wool was so low that the sheep were slaughtered by the thousands for their pelts and tallow, and breeding was suspended. In Knox County alone 30,000 were slaughtered in one autumn for their tallow and pelts, and the same practice prevailed throughout the State. That wool was low there was no question, for the political and commercial revulsions of Europe in 1847 and 1848, and subsequent depression in manufactures and stringency in money, had thrown immense quantities of woolens upon the American market and crushed the life out of the American manufacturer. It operated for many years in that direction, and the revival was slow. In 1854 the price of mutton and the growing demand for it led many in the vicinity of cities to cross their common sheep and their Merino ewes with Leicester or Southdown rams for the purpose of obtaining good-sized lambs for the butcher.

But most of the Merino breeders held on to their choice flocks and made improvements upon them. Crosses with the Saxons had been very common from 1835, and in the eastern counties bordering the Ohio River full-blood Saxons could be found in great abundance, and the fineness of their wool was not excelled by any other portion of the Union. The farmers of Jefferson, Harrison, Belmont, and other eastern counties realized large fortunes from their extensive flocks of fine-wooled sheep, and they had no trouble in finding a market. For months before the wool was shorn agents for Eastern manufacturers invaded the country to secure the clip. Here, where good wool was raised, the market found the grower; in other sections it was with difficulty that the grower could find a market. In the differences realized lie all the profits.

The weight of the Ohio Saxons and their yield of wool is given in the result of a shearing of these sheep at the Ohio State fair of 1854:

	Pounds.
1 ram 2 years old weighed 95 pounds; fleece	3½
1 ewe 2 years old weighed 52 pounds; fleece	2½
1 ewe 2 years old weighed 50 pounds; fleece	3
1 ewe 2 years old weighed 54 pounds; fleece	3
1 ewe 2 years old weighed 55 pounds; fleece	3
1 ewe 3 years old weighed 55 pounds; fleece	3

H. S. Mannon had 5 Saxons whose gross weight of carcass before being shorn and weight of fleece are thus given:

	Pounds.		Pounds.
Carcass	72	Fleece	3½
Carcass	66	Fleece	3½
Carcass	61	Fleece	4
Carcass	58	Fleece	3½
Carcass	57	Fleece	3½

Twenty-three Saxon fleeces were put in the hands of a woolen manufacturer at Fall River, Mass., for scouring, with this result:

One ram fleece before cleaning weighed 3½ pounds; cleaned, 1¾ pounds; value, $1.20 per pound.

Five ewes' fleeces before cleaning weighed 15 pounds; cleaned 8½ pounds; value, $1.14 per pound.

Five ewes' fleeces before cleaning weighed 19½ pounds; cleaned, 11 pounds; value, 97 cents per pound.

One ram fleece before cleaning weighed 6½ pounds; cleaned, 3½ pounds; value, 85 cents per pound.

Five ewes' fleece, before cleaning, weighed 17¾ pounds; cleaned, 11 pounds; value, 83 cents per pound.

One ewe's fleece, before cleaning, weighed 12 pounds; cleaned, 4½ pounds; value, 74 cents per pound.

Five ewes' fleeces, before cleaning, weighed 23½ pounds; cleaned, 13½ pounds; value, 74 cents per pound.

By 1860 the Saxons had practically run their course in Ohio, and were generally superseded by the Spanish Merino. There was some crossing with the French Merino, as also with the Silesian, introduced by William H. Ladd into Jefferson County in 1854, and which promised well.

While the eastern counties excelled in fine wool, sheep throughout the State could be shown yielding 4 pounds each of prime wool that sold at 45 to 60 cents a pound, and flocks were numerous that would yield as much wool per head of first quality as was formerly obtained of quarter and half blood Merino of the old Wells and Dickinson sheep. But, upon the whole, the number of fine-wooled sheep greatly diminished from 1854 to 1860.

Long-wooled sheep began to attract more notice, and were more popular for the small farms of the country near the cities, particularly on the rich bottom lands. The common, or so-called native, sheep went into Ohio with the early settlers, but were eventually crossed out by the Merino. The improved English breeds were taken into the State as early as 1830. Mr. T. S. Humrickhouse says that the first Southdowns, New Leicester, Lincolnshire, and Cotswold sheep he ever saw were brought into Coshocton County, from England, by Isaac Maynard in 1834. There were about ten Southdowns, and a trio of each of the other kinds. Mr. Maynard was offered $500 for his Lincoln ram as he passed through Buffalo, but refused to part with him. In about three years most of these sheep had perished. On the contrary, Henry Parsons, of Massillon, succeeded admirably with imported sheep, which he had for sale. He had a flock of Leicesters in 1840, of which he thus speaks:

My sheep you would scarcely know again, they have so increased in size. This climate suits them far better than their native one. They have, since they have been put up, had little more than oat straw to eat, and are greatly too fat for breeding sheep or even the butcher. I can keep five Leicesters where I can keep three common ones, and the former shall be fat.

An early Southdown flock was that of J. F. King, of Warren, who commenced breeding Southdown sheep in 1844 with stock from the flocks of Jonas Webb, Babraham, England, imported by J. M. Hesless, of Trumbull County, Ohio. In 1848 Mr. King bought of L. G. Morris, of New York, a ram bred from imported stock and known as the Morris ram. Descendants of this flock are found in some of the best Ohio flocks of the present day. The mutton sheep rapidly increased throughout the State and furnished the markets not only of the State, but those to the eastward. The Ohio mutton sheep was a common Merino crossed by a Down or Leicester ram.

The trade to the east received its greatest impetus in the low prices of wool from 1842 to 1845. When flocks were culled and sometimes sacrificed, drovers went through the country, bought up all the sheep that they could get at a low price, and drove them eastward, where they were sold to eastern Pennsylvania and New Jersey farmers to be fattened for the Philadelphia and New York markets. This business increased from 1845 to 1860, and the surplus and increase of flocks were thus disposed of.

The census of 1860 showed Ohio to have 3,546,767 sheep, shearing 10,608,972 pounds of wool. This was a loss of 396,162 sheep since 1850, and of 1,300,000 since 1854. But notwithstanding the decrease of sheep from 1850, the amount of wool increased over 400,000 pounds. The yield of wool per head increased from 2.58 pounds in 1850 to 2.98 pounds in 1860. This increase indicated an advance in the system of breeding and better management of flocks.

The war of the rebellion gave a great impetus to wool-growing. At first the wool market was depressed, fine wool falling from 60 cents in January, 1860, to 38 cents in July, 1861, and medium wool from 50 cents to 30 cents in the same period. In 1862 the demand for woolen goods was large and imperative, and in the spring of 1863 wool advanced 50 per cent over the winter price, and sheep doubled in value. At no time in the previous history of the State was the demand for wool so great. It advanced from 48 cents in July, 1862, to 85 cents in October, 1863, and $1 in July, 1864. Every farmer increased the number of sheep on his farm, and men of all classes, not farmers, were attracted to wool-growing—all intent on obtaining a sheep that would shear the greatest number of pounds of wool. Ohio, New York, and New England breeders could scarcely meet the demand made upon them for thoroughbred Merino rams, and they gathered in a fine pecuniary harvest. The Ohio Agricultural Report for 1862 gives a list of over 1,200 flocks of half, three-quarters, and full-blood Merinos, numbering over 230,000 sheep in flocks from 6 up to 6,000. Many counties were not included in the enumeration, and the counties enumerated were far from being fully represented. From these flocks and from Vermont and other blood a new era in Merino-sheep industry set in, and the march of improvement

was recorded in sheep-shearing shows, county and State fairs, and other exhibitions.

At the annual Ohio shearing of 1861, figures of 6 rams and 4 ewes were given:

Sex.	Age.	Weight of carcass.	Weight of fleece.
	Years.	*Pounds.*	*Lbs. oz.*
Ram	2	101	18 8
Do	2	83½	13 12
Do	5	117	14 8
Do	3	120	11 12
Do	3	134	14
Do	1	81	11 4
Ewe	4	67½	10
Do	2	69	9 10
Do	1	65	12 4
Do	3	80	8 10

At the Ohio State shearing at Newark, May 10 and 11, 1865, there were shorn 53 rams and ewes of different ages, giving an average of $13\frac{9}{16}$ pounds per head. The sheep after shearing weighed about 75 pounds per head on an average. Thirteen of these fleeces were from rams and averaged $17\frac{11}{16}$ pounds. The 40 ewe fleeces averaged $12\frac{1}{8}$ pounds each. Six of the 13 rams were yearlings, whose fleeces ran from $9\frac{13}{16}$ to $16\frac{13}{16}$ pounds each. One of these was the property of Paul Gurney, of Licking County. It weighed $82\frac{1}{2}$ pounds and sheared $16\frac{13}{16}$ pounds. Eli Keller's ram Hibbard, 2 years old, weighing 111 pounds, sheared $25\frac{13}{16}$ pounds of wool. This was a Vermont ram and had taken the premium the year preceding at the Ohio State fair as the best yearling. Hamburg, a 3-year ram, weighing $144\frac{1}{2}$ pounds, gave a $28\frac{1}{8}$ pounds fleece. Princess, a 4-year old ewe, owned by Mr. Keller, weighed $65\frac{1}{2}$ pounds and gave a fleece weighing 14 pounds $3\frac{1}{2}$ ounces.

At the Wyandot County shearing of 1865, 15 rams, whose average weight per head was 102 pounds, sheared an average of $15\frac{13}{16}$ pounds of wool. The heaviest fleece was $22\frac{3}{16}$ pounds. Twenty-six ewes sheared on an average $10\frac{14}{16}$ pounds. The amount of wool shorn from 41 sheep was 515 pounds, an average weight per head of $12\frac{9}{16}$ pounds.

The shearing in Columbiana County did not come up to the ordinary standard of the year. There was a heavy ram fleece of 25 pounds from a 4-year old ram weighing 118 pounds, but the average of 21, including this ram, was but $14\frac{2}{16}$ pounds. The Pittsfield wool-growers' shearing showed an average weight of carcass of 65 fine-wooled sheep, of $82\frac{1}{2}$ pounds; average weight of fleece, 13 pounds $8\frac{3}{4}$ ounces; average per cent of wool to carcass, $16\frac{4}{10}$. Greatest per cent, $26\frac{2}{10}$. Shearings in Morrow, Portage, Geauga, and Huron averaged about that of Wyandot.

In 1865 the Ohio State Board of Agriculture offered premiums "for

the heaviest and best fleeces of cleaned wool." The gross and scoured weight of the fleeces presented are given:

Sex.	Fleeces as sheared.	Fleeces scoured.
	Lbs. oz.	*Lbs. oz.*
Ram	24 4	8 2
Do	20 8	6 10
Do	21 11	6 13½
Do	23 1	8 3
Ewe	10 12	4 9
Do	14 15	6 0
Do	14 6	5 0½

During this year 17 Merino fleeces were scoured. Before scouring they averaged each 16.89 pounds of wool. When scoured they averaged 5.61, showing a loss of 65.5 per cent. This was a heavier shrinkage than shown in New York, Michigan, and Indiana wools. The comparison can be made by reference to this table:

State.	Fleeces.	Average.	Scoured wool.	Loss.
		Pounds.	*Pounds.*	*Per cent.*
Michigan	10	12.40	4.70	61.5
New York	14	12.63	4.61	62.7
Indiana	10	11.1	3.14	65.3
Ohio	17	16.89	5.61	65.5

At the Ohio State Fair of 1866 prizes were given for the best fleece of wool. There were six entries, and the weight of fleece as sheared and then scoured are given:

No. of entry.	Name and sex.	Fleeces as sheared.	Scoured.	Loss.
		Lbs. oz.	*Lbs. oz.*	*Lbs. oz.*
1	Thomas Aston, Elyria, ewe	11 5	7 5	4 0
2	Thomas Aston, Elyria, ram	13 13	9 4	4 9
3	J. Buckingham, Zanesville, ram	15 1½	4 0	11 1½
4	....do	15 1½	4 12	10 5½
5	T. F. Joy, Delaware, ram	10 13	7 9	3 4
6	T. F. Joy, Delaware, ewe	7 14	4 15	2 15

Mr. Buckingham's fleeces were Merinos; those of Messrs. Aston and Joy were long-wool, the former being Cotswold and the latter Leicester. The premium was awarded to Mr. Aston for the best ram and ewe fleece.

The Ohio State shearing for 1866 took place at Wellington. Thirty-four ram fleeces averaged 13$\frac{11}{16}$ pounds; the weight of carcass averaged 98 pounds. The heaviest fleece was 22$\frac{11}{16}$ pounds from a 4-year-old 116 pounds sheep. Twenty-nine ewes whose average weight per head was 61 pounds sheared 9½ pounds.

At the Licking County shearing, May 17, 1866, five entries were made of 3-year-old rams. One fleece was not weighed. The four that were weighed turned the scales at 22¼, 14½, 26¾, and 19¼ pounds—an average

of 20¼ pounds. Three 2-year-old rams averaged 18⅔ pounds, and 3 yearling rams 13 pounds. Spanish ewes at 3 years old gave 15¼ and 8¾ pounds; 2 years old 10, 11, and 12½ pounds, and yearlings from 7¾ to 15 pounds, the average of 8 being 10⅜ pounds.

At the Wyandot County exhibition 74 sheep were on the ground, but only 34 were shorn. Four yearling rams, whose average weight was 82 pounds, sheared 12½ pounds of wool each. Five 2 years old and over, whose average weight was 106⅛ pounds, sheared 18 1/10 pounds each. Ten yearling ewes averaged 58 2/10 pounds of carcass and 10 pounds 3¾ ounces of wool. Fifteen ewes 2 years old and over averaged 76 pounds to the carcass and 11 pounds 14¾ ounces of wool. The general average of the 34 sheep was 76¾ pounds of carcass and 12 pounds 8 1/7 ounces of wool.

The Geauga County shearing took place May 23. The Merinos receiving the premiums are presented in this table:

	Weight.	Fleece.
	Pounds.	*Lbs.* *oz.*
Two-year-old ram	106	18 5
Do	102¼	20 0
Three-years-old ram	136¼	11 5
Yearling ram	75¼	10 12
Do	65	8 11

The yearling ewes receiving premiums weighed 48¾, 54¼, and 53 pounds and gave fleeces of 7 1/16, 8 1/16, and 7 1/16 pounds. The 2-years-old ewes weighed 63½, 55½, and 70¾ pounds and their fleeces 11, 9, 10 3/16 pounds.

Shearings were also held in the counties of Seneca, Portage, Lake, Lucas, Wood, Morrow, Clarke, Media, Warren, Cuyahoga, Huron, Ashtabula, Columbiana, Ashland, Trumbull, and Tuscarawas, and all bore witness to a great improvement in the Ohio Merinos. It was observed also that the climate and food of Ohio being different from that of Vermont caused a gradual change in the fleece—producing aptitude of the Merinos brought from Vermont. Less knowledge of the laws of breeding, feeding, and less shelter caused the descendants of the Vermont sheep to fall below the original standard, except in some few cases where the Vermont practice was intelligently and closely followed.

But a new era had dawned on Ohio sheep husbandry. The number of sheep increased from 1862 to 1868, but their value declined from $3.50 per head in 1865 to $1.90 per head in 1868. There were causes for this in the falling off in the demand for wool after the close of the war, and the substitution of the coarse-wooled mutton sheep for the fine-wooled Merino. This change began in 1862 and 1863. Previous to this the longest and most lustrous combing wool grown in the country was used for the manufacture of carpets, and was compelled to

compete in the markets with the low priced foreign wools. The demand for coarse army woolens and the introduction of machinery for the manufacture of long wools into all the fabrics made from them in England, and the deficiency of these wools in our own markets, caused the prices of them to rule high and encouraged the wool-grower to discard his Merino and adopt the long-wooled as the most profitable sheep. The movement in that direction was emphasized by the action of some prominent members of the Wool-growers' Association, who called attention to the fact in 1866 that not more than 1,000,000 pounds of first-class combing wool was annually produced in the United States, while more than 10,000,000 pounds were used, and twice the amount manufactured was imported in the form of worsted goods. There was also suggested the propriety of changing from growing wool to raising mutton, not with the understanding that fine-wool sheep-growing was to be entirely abandoned, but every flockmaster who was properly situated should dispose of some of his fine wools and replace with long-wools or mutton sheep. The suggestion was followed where it was not anticipated.

In 1865 and 1866 there was scarcely a county in Ohio that could not lay claim to the possession of a $1,000 Merino ram. But wool fell from $1 to 60 cents and so on down to 40 cents in 1867, and a great change came over the sheep husbandry of the State and the whole country. Many Western farmers and wool-growers gave up wool-raising and sent their sheep to be slaughtered for pelts and tallow. In Ohio many slaughtering establishments were put up with a capacity for 20,000 to 50,000 sheep, and thousands of good Merinos were sold them at $1 to $2 per head that had ready sale twelve months before at ten times the amount. They even sold as low as 60 cents; their pelts were removed, their carcasses thrown into rendering vats, and the refuse fed to the hogs. The slaughter continued, and during the autumn of 1867 and early winter of 1868 many more thousands were disposed of for their pelts alone and their carcasses thrown to the hogs. Referring to this disposition of so many sheep a paper of February, 1869, remarked:

> It seemed at the time a great waste of sheep life, but when we recollect that there was scarcely a single flock with Vermont blood in it that was not at the same time affected with foot-rot, we may be glad to know that there are thousands if not millions less to disseminate this plague. In 1868 the number of sheep in the State was 7,688,845, nearly all Merinos of various grades. The great depression in wool and its fabrics still continued, and thousands of sheep went to the rendering establishments, and during the year there was a reduction in the number of nearly 20 per cent, and in 1869 of nearly 25 per cent, being 4,928,635 in 1870 against 7,688,845 in 1868. Every one seemed ready to abandon sheep. Huge flocks were undergoing depletion and many flock-owners were crossing their Merino ewes by long-wooled rams to engage in growing combing wool instead of the carding and cloth wool. Particularly was this the case in the vicinity of the cities of Cleveland, Toledo, Columbus, Dayton, and Cincinnati, where Southdowns and Leicesters as well as Cotswolds and their crosses, mostly imported from Canada, were bred more especially for mutton than wool. Still, of the less than 5,000,000 sheep in 1870 the Merinos

were largely in the majority, but from the failure to breed them for three years back there were but few ewes under 4 years old, a state of things which, if continued much longer, would cause the final extinction of the fine-wooled sheep. But the summer of 1871 brought a revival in the wool market just in time to check the general disposition to discard the Merino altogether in favor of long-wooled sheep.

The wool-growers of Ohio are an intelligent and influential body of men, and have among them some astute politicians. In the depressed condition of their industry they were not slow in divining the cause—in fact they had anticipated it. For a long series of years the tariff system of the country had been in the interest of the manufacturer and not that of the producer and consumer. The woolen manufacturer had protection on his manufactured goods, but the wool-grower had none against the cheap wools of Asia, Europe, and South America. In 1861 a duty of 5 per cent ad valorem was placed on all wools costing less than 18 cents per pound at place of export. This duty was less than 1 cent a pound upon Mestiza or Buenos Ayres wools. The war of 1861–'65, with the resulting scarcity of cotton, vastly increased the use of wool in the North and stimulated its production. The increase of production was not confined to the North, but extended in other portions of the world. Under our nominal tariff duties the influx of foreign wools into the country was greatly increased. The annual imports of the Mestiza wools of Buenos Ayres increased from less than 6,000,000 pounds in 1862 to over 17,000,000 pounds in 1863 and 24,000,000 pounds in 1864. In 1866 the importation from Buenos Ayres was 36,915,794 pounds. In 1862 we imported about 4,500,000 pounds of wool from Africa; in 1864 the importation was over 16,000,000 pounds. Before the year 1861 these wools had averaged at place of export but 13 cents per pound, and the highest average of cost of the Buenos Ayres wools was in 1864, when it was 15.1 cents per pound. Thus when these wools were 15 cents at Buenos Ayres they could be delivered at New York or Philadelphia, all freight charges and tariff paid, at about 21 cents a pound. But there were some disadvantages in the use of this wool. It was imported in the dirt, often filled with burrs, and, owing to the weakness of its fiber, lost much in the processes of manufacture; so that 2 pounds as imported made only as much as $1\frac{1}{2}$ pounds of American clothing wool in average condition. When put in the same condition with the American wool it cost the manufacturer about 38 cents a pound. Let the cost of wool in the United States markets be compared with this. From 1827 to 1861 the average price was 50.3 cents per pound for fine, 42.8 cents for medium, and 35.5 cents for coarse. The fine and medium qualities, corresponding to Buenos Ayres or Mestiza wools, averaged $46\frac{1}{2}$ cents. In 1864 a wool and woolen tariff was framed which imposed a duty of 3 cents a pound on wools costing 12 cents and under at place of export, and 6 cents per pound on those costing more than 12 cents and not exceeding 24 cents. This tariff would not bring the price of imported wools up to the average American wool by at least 2 cents a pound

even when honestly administered. But it was not honestly administered, or, perhaps, to speak more properly, fraudulent practices brought most of the wool in under the 3-cent duty, when it should have paid 6 cents. This, of course, was a great gain to the manufacturer, but of no benefit to the farmer. It was the first time since 1828 that duties were put on manufactured wool over and above the amount of protection required by the manufacturer, sufficient to compensate for the duty upon the raw material. The total amount of imports of raw wool from 1861 to 1864, both years inclusive, is shown in this table:

	Pounds.
In 1861	31,638,533
In 1862	43,698,138
In 1863	74,412,878
In 1864	91,026,639

Notwithstanding this large importation of wool, three times as much in 1864 as it was in 1861, and a continued large importation of manufactured woolens, the number of sheep and the product of wool increased very rapidly, sheep advanced in price and everything looked prosperous. From 1861 to 1865 Ohio fleeced wool averaged at New York, in currency 66½ cents per pound, 23.64 cents higher than the average of the thirty-five preceding years. The large importations of raw wool did not disturb the wool-grower whose receipts were so bountiful, and the increasing demand for wool, and the flourishing condition and rapid extension of manufactures excited his mind to a degree beyond any former period. It was believed that the consumption of wool would be permanent, and that woolen goods would supersede those of cotton. There were others who looked further into the future. These were perfectly aware that wool had practically no protection, but anticipated that the war debt would demand for years an amount of revenue which would, under the adopted theory of discrimination, insure the speedy and adequate protection of wool. Nowhere was the mania for fine-wool growing so prevalent as in Ohio, and nowhere are wool-growers so mercurial and prone to run from one extreme to the other.

The Ohio growers saw, when peace was about to come upon the warring sections, that the great demand for wool would measurably cease, and that with the overproduction of our manufactories and heavy importations of raw wool under a low tariff, wool-growing would receive a deadly blow. They joined in a movement looking to the union of the wool-grower and the woolen manufacturer in the demand for a tariff that would protect both interests. The result was a convention of the wool-growers and the wool manufacturers at Syracuse, N. Y., December 13, 1865.

One of the prominent members of the convention, in a report some years later, says of it:

> The convention of 1865 is memorable among other things for the conflicting sentiment in the woolen industry which preceded and was the cause for invoking it. A difference of opinion, amounting to actual hostility between the two interests sup-

plying and manipulating the raw material of our woolen-mills, had been gaining strength for fifty years, and had assumed the phase of sectional animosity between the East and West. On the one hand, the West, representing the wool-growing interest, exaggerated the profits of the Eastern manufacturers; claimed that it bore without compensation the burdens of the duties which promoted their profits; ignored the fact that the specific duties on foreign goods competing with our own were but the equivalents for duties on the raw material which the wool-grower received; and demanded the miscalled equality, so obnoxious to the manufacturing interest, under the horizontal tariff of 1846. The manufacturers, on the other hand, representing a growing sentiment in the East, were becoming more and more disposed to look abroad for the chief supply of raw material. They were not unwilling to avail themselves of such commercial practices as would diminish the duties intended to be given for the protection of the American wool-grower, and were inclined to advocate the British policy of free trade in raw material, including wool, as the wisest system of protection to manufacturers. They overlooked the fact, which they have since acknowledged with returning magnanimity, that it has been the experience of all nations that the domestic supply of raw material has been the first and always chief dependence of its manufacturers. They failed also to consider that, while aiming at the largest and cheapest supply of foreign wool, they would render American sheep husbandry unprofitable, and inevitably destroy domestic production, thus reducing themselves to a sole dependence upon sources liable to be cut off by foreign wars or political revolutions. The inevitable result of such diverging views must have been perpetual strife and legislative action, which, favoring each interest exclusively, as its influence might preponderate, must alternately ruin both. From this explanation of the old differences which formerly distracted the woolen industry, it can hardly be doubted that the disaffection toward the prevailing policy, exhibited by a limited number of the older manufacturers and wool-growers, is but the expression of the traditional hostility in which they were nurtured.

The convention of 1865 is chiefly memorable for its influence in reconciling this disastrous feud. This influence was the result of the simplest means—nothing more than bringing for the first time, face to face, the interests which had been prejudiced and hostile only because they misunderstood each other. A conference of but a day between the rival interests was sufficient to establish a basis of adjustment. This basis was the recognition of mutuality of interest, and a right to equality of protection. The principles upon which harmony might be established were expressed in the resolutions unanimously adopted by the convention, which have an historical value as the first joint expression of the two branches of the wool industry of the country. They are as follows:

Resolved, That the mutuality of the interests of the wool producers and wool manufacturers of the United States is established by the closest of commercial bonds, that of demand and supply; it having been demonstrated that the American grower supplies more than 70 per cent of all the wool consumed by American mills, and, with equal encouragement, would soon supply all which is properly adapted to production here; and, further, it is confirmed by the experience of half a century that the periods of prosperity and depression in the two branches of woolen industry have been identical in time and induced by the same general causes.

Resolved, That as the two branches of agricultural and manufacturing industry represented by the woolen interest involve largely the labor of the country, whose productiveness is the basis of national prosperity, sound policy requires such legislative action as shall place them on an equal footing, and give them equal encouragement and protection in competing with the accumulated capital and low wages of other countries.

Upon this as a basis the committees appointed by the two interests after many conferences agreed upon the draft of a bill proposing the duties on wool and woolens, which was substantially adopted in the tariff law of 1867. In these conferences it

was conceded by the wool-growers that this business could not flourish unless the manufacturers were fully established and sustained; that capitalists would not invest adequate sums in buildings and materials without good prospects of profit and permanency in the business; that without permanency the needful skill and experience in the operatives could not be maintained; that, taking into view the price of labor in Europe and the price of wool here, the manufacture of woolens could not be established here in competition, unless some favor on public ground could be accorded to the manufacturer, and both parties insisted that the importance of the industry in every point of view, besides its magnitude, made claim for favorable legislation valid. It was shown by ample proof that wool could not be grown here unless the manufacturers of wool could be permanently established; and that the consumption of woolens could never reach the adequate figure of $10 per head of the increasing population, unless wool-growing and the manufacture of wool both take their place among the established and successful industries of the country.

The manufacturers claimed that, until similar wools shall be supplied at home, a considerable proportion of the fine but inferior and very cheap wools of South Africa and other countries would be required to give variety, special qualities, and cheapness to certain descriptions of their woolen goods; but did not resist the claim of the wool-growers to have such a duty imposed on these wools as would encourage their growth, and in time supply their place, at least in part, by home-grown wool.

The manufacturers, on their part, claimed as these cheap wools entered English ports free of duty, and as the cost of labor entering into the production of woolen goods in Europe was less than half the rates paid in this country, that such duties should be asked of our Government as would place them in fair competition with foreign manufacturers in our own market.

The lesson learned by the wool-grower was that his market for wool was at home, and that in securing a duty upon his wool he must make some compensation to the manufacturer. The aim of the framers of the tariff of 1867 was, "while protecting the wool-grower, to place the manufacturer in the same position as if his raw materials were free of duty. For this end a careful calculation was made of the sum which would be paid by the manufacturers for the duties on the wool, drugs, dyestuffs, and other materials for each pound or square yard of fabric made by him, and a specific duty per pound or square yard was placed upon corresponding foreign fabrics. The specific duty on the foreign fabric was intended to exactly neutralize the duty imposed on the raw material. To this specific duty an ad valorem duty was added for revenue and the protection of the manufacturers. By the theory of the tariff, the only protection which the manufacturer received is this ad valorem duty. And it was intended that his protection should be equal to the full amount of the ad valorem duty. But the protective effect of the ad valorem duty is partially modified by the duties on other materials used in manufacturing processes, and by local taxes from which our foreign rivals are exempt, as well as by undervaluation of imported goods.

The wool was classified into three kinds—clothing, combing, and carpet and other similar wools. Clothing wool costing less than 32 cents per pound was charged with a duty of 10 cents per pound and 1 per cent ad valorem; if valued over 32 cents per pound, the duty was 12 cents and 10 per cent ad valorem. The same rates were applied to combing wools, hair of the alpaca, goat, or other like animals. On carpet wools and other similar wools, valued at 12 cents or less per pound, the duty was fixed at 3 cents a pound, and 6 cents if the value was over 12 cents a pound. Sheepskins and Angora goatskins, raw or unmanufactured, imported with the wool on, washed or unwashed, 30 per cent ad valorem.

The woolen tariff act was passed March 3, 1867, and great results were promised and anticipated. There was a slight increase in the number of Ohio sheep for 1868, but a fall in their value of 30 per cent, and from 1867 to 1877, a period of ten years, the number of sheep declined one-half, from 7,555,507 in 1867 to 3,724,040 in 1877. Ohio fleece wool declined from 1866 to 1871 as follows:

Year.	Fine wool.	Medium wool.	Coarse wool.	Average.
	Cents.	*Cents.*	*Cents.*	*Cents.*
1866	67	63	53½	61.16
1867	57½	50½	46½	51.57
1868	48	46	40½	44.75
1869	49	49	47½	48.41
1870	47½	46½	44½	46.08
1871	55	54	53½	54.08

The decline from 1866 to the summer of 1871 is attributed to overproduction in our own country, the immense quantity of woolen goods thrown upon the markets at the close of the civil war, and excessive importations from abroad. The tariff bill failed to pass in the session of 1865–1866, and in anticipation of its passage the ensuing session, 71,000,000 pounds of wool, and woolens of the value of $57,115,000—almost equaling the entire imports of the four preceding years—were imported under the existing low duties. It was not until 1871 that there was a revival. It took the intervening time to work off the excessive stock of 1865 and 1866. In 1872 Ohio wool averaged 69½ cents a pound. It is the belief of the Ohio wool-growers that the tariff of 1867 saved the woolen industry of the whole country from destruction, and that the revival of 1871 was just in time to save Ohio flocks. But the prospective protection on wool in 1865 and 1866 and the passage of the act of 1867 led to the extension of wool-growing beyond the Mississippi on lands costing little or nothing, and the competition on these new fields was more severe than with foreign countries, and the immediate result was the removal of many flocks from the high-priced lands of Ohio and a steady diminution in the number of sheep, until 1877.

Year.	Number of sheep.	Year.	Number of sheep.
1868	7,688,845	1873	4,596,864
1869	6,272,640	1874	4,333,868
1870	4,928,635	1875	4,100,288
1871	4,302,904	1876	3,854,528
1872	4,464,898	1877	3,724,040

Ohio fleece wool touched its highest price in 1872, and then steadily declined until 1880, when it made a slight recovery and again declined. The market prices from January, 1871, to December, 1890, are shown in the following table:

Prices of fine, medium, and coarse washed clothing Ohio fleece wool in the Eastern markets for the months of January, April, July, and October of each year from 1871 to 1890, inclusive.

Year.	January.			April.			July.			October.		
	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
1871	47	46	43	50	52							
1872	70	72	66	80	80	47	62	60	55	63	62	58
1873	70	68	65	56	53	76	72	70	65	66	60	57
1874	58	54	47	56	56	48	50	48	44	54	53	47
1875	55	56	47	54	52	47	53	53	46	54	54	47
1876	48	52	42	46	49	46	52	49	46	48	50	42
1877	46	43	36	45	40	40	38	35	31	45	40	33
1878	44	45	38	40	43	33	50	44	37	48	44	36
1879	34	35	32	34	34	35	36	36	32	35	37	32
1880	50	55	48	55	60	31	37	38	34	41	43	38
1881	47	49	43	40	44	52	46	48	42	46	48	42
1882	44	46	47	42	45	37	42	44	36	43	46	36
1883	40	43	33	44	44	34	42	45	34	42	45	34
1884	40	40	34	38	38	37	39	41	33	39	40	34
1885	34	33	29	32	32	34	35	34	30	35	34	30
1886	35	36	32	33	34	28	32	31	28	33	35	32
1887	33	38	34	33	37	30	33	33	29	35	38	34
1888	31	35	33	31	34	33	34	37	34	32	36	34
1889	34	36	33	33	37	33	29	33	31	31	34	31
1890	33	37	29	33	36	31	35	39	32	33	37	31
						29	33	37	29	33	37	31

With the revival in prices in 1871–'72 came also publications of sheep-shearings and yield of fleeces. In 1871 Messrs. E. J. Hiatt & Co., of Morgan County, sheared 15 rams and 30 ewes of 660½ pounds of wool.

Fifteen rams sheared 234 pounds, an average of 15$\frac{9}{15}$ pounds, unwashed wool.
Twenty-three ewes sheared 322 pounds, an average of 14 pounds, unwashed wool.
Seven ewes sheared 104½ pounds, an average of 14$\frac{7}{8}$ pounds, unwashed wool.

In 1872 the same parties sheared 20 rams and 60 ewes of 1,080 pounds of wool. The heaviest ram fleece was 24½ pounds, the heaviest ewe fleece 21½ pounds. The ram fleeces generally ran from 15 to 18 pounds and the ewe fleeces from 12 to 17 pounds. Three rams showed an average weight of carcass of 154 pounds each, and 17 ewes averaged 120½ pounds each.

The Hiatt Brothers, Chester Hill, Morgan County, laid the foundation of their flock in 1868, by the purchase of 4 ewes from J. T. and V. Rich; 4 ewes of W. R. Sanford, and 3 ewes from C. D. Lane, all of Vermont. The ram Old Grant, bred by Milo J. Ellsworth, Middlebury, Vt., was first used. This ram was a descendant of the Humphreys, Cock, and Jarvis flocks. There were subsequent purchases of rams and ewes bred by the Messrs. Hammond, E. S. Stowell, F. D. Barton, and others, of the same blood, including 1 ram bred by W. R. Sanford, 1 bred by E. S. Stowell, and 1 bred by S. G. Holyoke. Rams of their own breeding were also used. In April, 1876, this flock consisted of 60 ewes and 21 rams, descendants of and bred to combine the blood of the Cock, Jarvis, and Humyhreys flocks, and of 14 ewes and 9 rams pure Humphreys sheep as bred by Atwood and Hammond.

In 1875, Jacob H. Keller's flock was shorn and 50 ewes yielded a total of 740$\frac{11}{16}$ pounds, an average of 14$\frac{13}{16}$ pounds each. The heaviest fleece

was 18¾ pounds, and the uniformity of the weights in the entire lot was very remarkable, the variation from the average being very slight. Mr. J. H. Keller's flock was laid in purchases of ewes from the estate of his father, Eli Keller, who had one of the best flocks of Licking County. At this time it consisted of 40 ewes and 9 rams, pure Atwood blood, and 27 ewes and 6 rams descendants of and bred to combine the blood of the Humphreys, Cock, and Jarvis flocks.

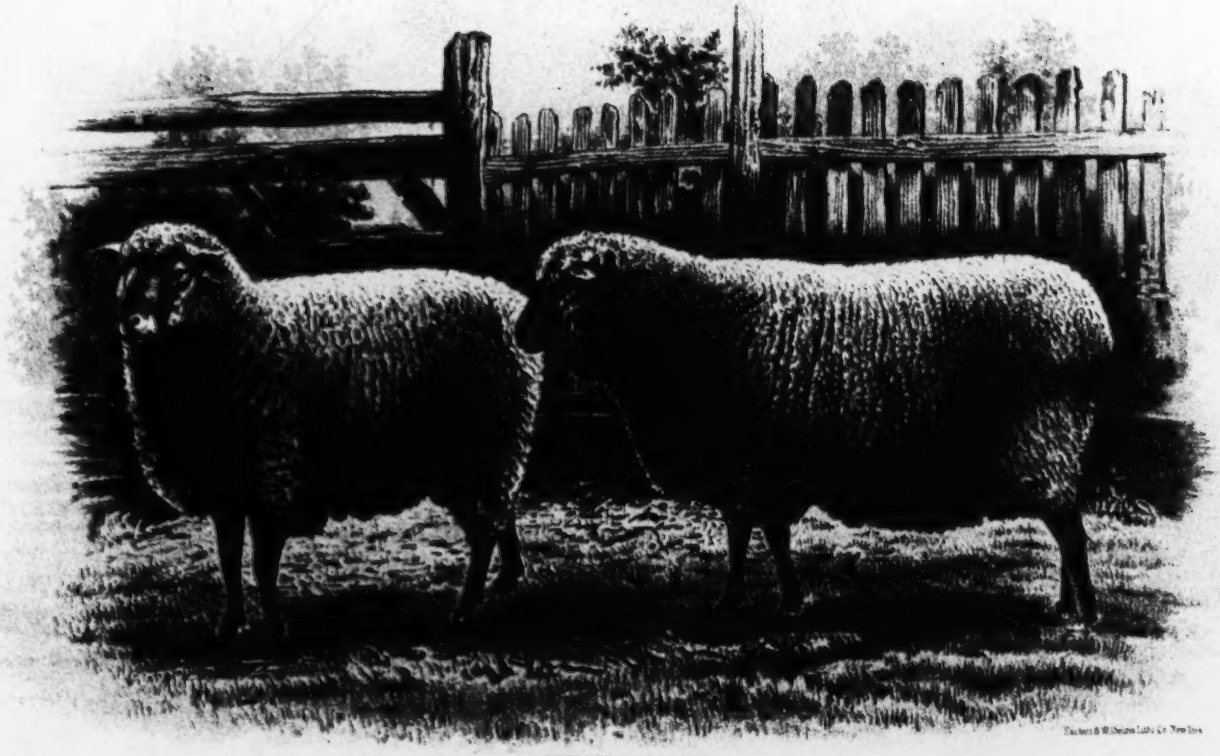
Shearings in various parts of the State from 1871 to 1875 showed a marked advance on those from 1861 to 1865 in the weight of fleece, but the interest was a languishing one after prices of wool again declined in 1873, and there was a disposition to abandon the fine-wool sheep and raise the mutton sheep. From 1868 to 1872 a large number of flocks of good Merino sheep were allowed to run down by breeding to rams of unknown and inferior blood, and from 1873 there was a crossing with the long-wool rams, and in 1875 and 1876 there was a perceptible decline of pure-blood Merino flocks throughout the State, particularly in the southern and western parts and near the cities on the lakes. Many of the lake townships have almost ceased to raise sheep. The long-wools have fleeces too open and thin for the sudden and severe changes of the winters, and do not thrive in flocks of any considerable number. Nor are they needed to any large extent to supply the demand for combing wool, which was formerly in great demand. The improved machinery of the day combs a shorter staple than formerly. Wool 2½ to 3 inches long can now be combed with ease, and there are many breeders in Ohio, West Virginia, and Washington County, Pa., as shown in preceding pages, that now grow fleeces from unhoused Merinos with a length of wool from 2½ to 4 inches. The Black-Tops produce a staple 4 to 5 inches long.

The great change in the sheep husbandry of the State is attributed to the low prices of wool since 1872. Merino flocks are not now as large, and the mutton sheep have been more looked to, and in general have proven to be the most profitable. Fine Leicesters, Lincolns, Cotswolds, Oxfords, Hampshires, Southdowns, and Shropshires have found their way into all parts of the State, and are increasing, while the Merinos are decreasing. In 1865 90 per cent of the sheep of the State were Merinos and their grades, while in 1886 but 52½ per cent were Merinos, and the remainder Shropshires, Oxfords, Cotswolds, and other mingled blood. The proportion of each is shown as follows:

	Per cent.
Pure Merinos	13.0
Grade Merinos	39.5
Pure Shropshire Downs	2.3
Grade Shropshire Downs	4.3
Pure Oxford Downs	0.9
Grade Oxford Downs	1.4
Pure Cotswolds	3.9
Grade Cotswolds	9.0
Mixed blood	25.7

The mixed blood includes Southdowns, Leicesters, Lincolnshires and grades, and are most numerous in Ashland, Ashtabula, Fulton, Highland, Lucas, Pickaway, Scioto, Stark, and Van Wert counties. The Cotswolds predominate in Preble, Mahoning, Clermont, and Auglaize; the Oxfords are confined to few counties, and the Shropshires are generally diffused and are in greater proportion in Auglaize, Columbiana, Hamilton, Montgomery, Trumbull, and Wayne. Those counties having over 70 per cent of Merino and Merino grades are Adams, Athens, Brown, Belmont, Carroll, Clinton, Crawford, Erie, Guernsey, Harrison, Henry, Holmes, Jefferson, Licking, Logan, Madison, Marion, Meigs, Monroe, Morgan, Ottawa, Seneca, Tuscarawas, and Wyandot. Harrison County still retained 90 per cent of the Merino in her flocks, including some Saxony, and Jefferson had 85 per cent. The American or Spanish Merino was in the lead, but many were breeding the Black-Top, thinking them the more hardy and not so liable to be affected with foot-rot.

What can be done by legislation can also be undone by legislation. The tariff of 1867 came, it is claimed, in time to save the Merino flocks. The revision of that tariff in 1883 is claimed to have been a great blow to Ohio's wool industry and to that of the whole country. Wool in 1880 began to decline, and had fallen from 6 to 10 cents in 1883, when the act was passed, and it declined still more in the years succeeding. Low prices of wool decreased the number of sheep from 5,089,363 in 1883 to 3,605,069 in 1889. The ultra protectionists for wool declared that the industry was ruined, and the grower, sometimes without calculation, sold off his flocks and tried horses and cattle. Sheep almost went begging, and as late as 1888 good grades were disposed of in some of the central counties for $2 per head, which were worth $5 per head two years later. The fine-wool flocks were the sufferers in 1883. The decline of wool and the uncertainties of legislation, combined with the increasing demand for mutton, convinced many farmers of Ohio that wool-growing could be made to pay only when combined with raising mutton. It was discovered that it was an extremely difficult matter to keep one eye on a Congressman in Washington and the other eye on a flock of sheep in Ohio, and the reasonable conclusion was that it was better to raise a sheep that was self-protecting than to depend upon legislation for protection. Consequently those breeds were selected which could raise a good carcass as well as shear a good fleece. The Cotswold came in for a good share of this change. The lambs of this breed are strong, often come twins, and the ewes are better mothers than the Merinos. Their lambs can be secured early in the spring, even as early as February if kept in warm quarters, and when grass comes can subsist upon it. In three to four months they will be ready for market at $4 to $6 per head. Two lambs from a single ewe, together with her wool clip, afford a very fair profit—more than can be made from the Merino alone. A cross between the Cotswolds and the Merinos has advantages. It combines



OXFORDDOWN SHEEP.

in one sheep the heavy and robust carcass of a mutton sheep with a dense, heavy fleece of the fine-wooled Merino. To produce and maintain this cross most breeders use the Cotswold ram through his period of service and then a Merino ram, using the best of either breed whenever a ram is required. The cross yields from 6½ to 8 pounds of washed wool, which commands a good price in the wool market. The carcasses will average 160 to 180 pounds, and are good mutton. In some localities the Cotswolds have fallen into disrepute on account of what is vulgarly termed their "snotty nose" condition.

The Southdowns, however, are the favorite mutton sheep and maintain their ground, particularly in the neighborhood of the cities, where the best of mutton is in demand, and since 1883 renewed interest has been shown in breeding them. The Oxfords, Hampshires, and Shropshires all took a fresh start about 1885. Shropshires numbered one-fourth of the whole, or more than double what they had done at any previous day, and they have made much headway since. There are some good breeding flocks kept in the State which are maintained by yearly importations from the best flocks of England. One who has had an experience of sheep-breeding extending over thirty years, during which time he had bred the Southdown, the Leicester, the Cotswold, and the Lincolnshire, and for ten years the Shropshire exclusively, asserts that for the general farmer in the Central and Southern States, where the land ranges in value from $40 to $50 per acre, there is no breed of sheep that pays better profit for keeping than the Shropshire. They combine all the good qualities of other breeds, and in many respects greatly surpass them. As compared with Southdowns, which are acknowledged to be their equals as to general hardihood and excellence of flesh, they are superior in size and in the quantity and quality of wool. Rams of this breed have been known to weigh 300 pounds and give 15 pounds of wool. A cross of the Shropshire ram on the Merino ewe gives a good result in mutton, but not the quantity of wool to enthuse the Ohio wool-grower.

The Oxford Downs are not so widely extended as the Cotswolds, the Southdowns, or the Shropshires, but they have staunch friends and in some sections of the State are preferred over all others. They are preferred for crossing on the common and grade Merino ewes. This cross secures a fine, large carcass of excellent mutton qualities, shearing very large fleeces of good wool, and the sheep are strong and healthy. A cross on a flock of Merino ewes that averaged 6½ pounds of wool per head gave a progeny that sheared, when lambs, 6 to 10 pounds. An Ohio breeder, in a communication to the Sheep-Breeder and Wool-Grower, states that the average weight of his Oxford ewes, ranging from one to five years, in good breeding condition, on the 1st day of September, 1890, was 193 pounds and the rams 325 pounds. Their fleeces in the spring of 1891, at twelve months and five days' growth, averaged 11 pounds and 14 ounces. For crossing on the native ewes of

the country he found the Oxford Downs to excel any and all other breeds he had ever tried, and he had tried many, including the Merinos and Shropshires. The grade lambs—like the pure-bred ones—are strong, robust, and hardy, grow rapidly, mature early, respond very quickly to feed, and mature into large, heavy-bodied, compactly-built, excellent mutton sheep, and at the same time pay well for their keep by producing large, heavy fleeces of desirable wool. In the fall of 1887 he sold a ram to a gentleman living in Lenawee County, Mich. This gentleman bred the ram to 56 Merino ewes and the next season those ewes raised him 61 lambs, which he sold early in the fall to a neighbor for $4.25 per head. That neighbor fed them with 50 lambs of his own raising that were sired by a recorded Shropshire ram from Merino ewes, originally from the same flock as the others. When he sold these lambs the following April at about twelve months of age, the half-blood Oxford Downs averaged in weight 21½ pounds per head more than the half-blood Shropshires, and they were all fed alike and received identically the same care; and although they were not shorn, it was the opinion of both breeder and feeder that the Oxford grades would clip at least 2 pounds per fleece more than the Shropshire grades. In a condensed report giving the average weight of the different breeds of sheep at the Chicago Fat Stock Show from 1878 to 1887 inclusive, comparing early Oxford Down wethers with other breeds, it is stated thus: Cotswolds, 198 pounds; Southdowns, 176 pounds; Shropshires, 178 pounds; Oxford Downs, 201 pounds. A comparative statement of gain, in ounces per day, of sheep exhibited at the Christmas show of the Smithfield Club in 1889, the greatest fat stock show in England, places the then leading medium wool breeds in the following order: For wethers—Southdowns, 5.2 ounces; Shropshires, 6.2 ounces; and Oxford Downs, 9.3 ounces. Lambs—Southdowns, 8.1; Shropshires, 9.3; Oxfords, 10. The experience of Ohio breeders shows similar results and encourages them in the belief that the Oxford Downs, all things considered, are the most profitable sheep, not only for the breeders of recorded stock, but for the general farmer, for grading up his flock for the production of wool and mutton at a profit.

But there are localities where the English breeds will not thrive, and where the Merino is at its best; and here there has been a change since 1885. The wool-growers in these localities, taught to believe that wool-growing is the prime object in keeping sheep, and unwilling to give up an industry that has been and can be made profitable, and recognizing the fact that the best possible protection to wool is the sheep itself, are moving in the direction of a larger carcass and more wool to the square inch. This has caused an increase in the Delaine Merinos, which are superseding the Vermont type of Merinos in various localities and are recognized as a class at the annual State exhibitions. They weigh from 120 to 180 pounds, have fine, soft wool, with a long, clean fiber, and as a general-purpose sheep, combining wool and mutton production, are

coming into a very prominent position. In some places they are superseding the Black-Top Merinos, to which they are closely allied. Others, however, cling to the Merinos of their boyhood and find a profit in them; not the Merinos of thirty-five years ago, clipping 2 to 4 pounds of wool, but the descendants of those sheep on the same farm, which, by care and attention, skillful treatment, and generous keep, give fleeces weighing 8 to 10 pounds each. There are many such flocks throughout the State, considered as good property and paying about as well as any farm stock.

Notwithstanding the depression among the Ohio wool growers since 1883, most of them have retained their flocks, reducing them in numbers, it is true, but improving them by selection and increased care. Weights of fleeces have not been generally published, but there has been an increase, as in other States. In 1886 5 Ohio ewes are recorded as shearing over 18 pounds of wool each, as follows:

	Pounds.
3 years old	20
3 years old	19
3 years old	18⅝
2 years old	20½
2 years old	19

The number of sheep in the census years and the yield of wool are given herewith. From 1840 to 1880 the figures are as returned by the United States census. For 1890 the returns of the Department of Agriculture are taken for the number of sheep, and the yield of wool is estimated from data believed to be equally reliable:

Year.	Number of sheep.	Wool.	Average weight of fleece per head.
		Pounds.	*Pounds.*
1840	2,028,401	3,685,315	1.81
1850	3,942,929	10,196,371	2.58
1860	3,546,767	10,608,927	2.99
1870	4,928,635	20,539,643	4.16
1880	4,902,486	25,003,756	5.10
1890	3,943,589	21,808,847	5.53

A comparison of the weight of fleeces from 1840 to 1890 shows a marvelous increase. As the figures for 1840 are not deemed reliable we will exclude them from the comparison we are about to make and deal only with the figures as given from 1850 to 1890. From 1850 to 1860 the average weight of fleece increased 16 per cent; from 1860 to 1870 the increase was 40 per cent; from 1870 to 1880 it was 23 per cent, and from 1880 to 1890 about 8 per cent. From 1850 to 1890, a period of forty years, the increase was 114 per cent. To put it in another way, 100 sheep would shear as many pounds of wool in 1890 as 108 in 1880; as many as 134 in 1870; as many as 185 in 1860, and as many as 210 in 1850. It would require 100 sheep in 1850 to shear 258 pounds of wool; in 1860 it would require 86¼ sheep; in 1870 it would require but 62 sheep, in 1880 but 50, and in 1890 only 46. In 1890 the number of sheep exceeded those of 1850 but 660, yet the yield of wool was more than double. Again a hundred-acre farm that would raise 100 sheep in 1850, producing 258 pounds of wool, would raise the same number in 1890 producing 553 pounds; or to put it in another light, if it required 100 acres to raise 258 pounds of wool in 1850 it would require but 46 acres to raise the same amount of wool in 1890. Still another element comes into the calculation. Sheep are great fertilizers to the soil, and land on which they have grazed for many years has its producing qualities increased all the way from 10 to 50 per cent. Allowing it to be the former figure and including this increased fertility in our calculation we arrive at the conclusion that about 40 acres in 1890 produced as much wool as 100 acres in 1850.

The value of sheep as help to wheat-growing has not been as highly appreciated in Ohio as in some other sections, yet its value has been acknowledged. It is reported of Erie County that in 1887 its sheep industry had greatly declined, whereas in former years the flockmasters were numbered by hundreds. Many sold out entire flocks, and a further reduction would have followed were it not for the fact that the wheat-growers who cleared their fields found the flocks a good adjunct, the one helping the other. What is true of Erie County is true in other counties of the State, and wheat and wool-growing go hand in hand. An instance is on record where a wheat-grower allowed his flock to graze upon part of a field of winter wheat which had been so badly frozen in the spring that it was thought to be ruined, and who was much surprised to find upon harvesting and thrashing his crop that the portion cropped close to the ground by the sheep yielded at the rate of several bushels per acre more than that portion upon which the sheep had not been permitted to run. Since then he has practiced pasturing his wheat fields until past the middle of April of each year, and has succeeded in raising on an average from 25 to 30 bushels per acre.

Prices of fine, medium, and coarse washed clothing Ohio fleece wool in the Eastern markets for the months of January, April, July, and October of each year from 1824 to 1890, inclusive.

[From Mauger & Avery's Annual Wool Circular.]

Year.	January.			April.			July.			October.		
	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.	Fine.	Medium.	Coarse.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
1824	68	53	40	70	46	31	55	40	30	60	40	30
1825	60	43	32	60	42	33	50	41	32	50	42	36
1826	55	43	38	52	46	41	37	30	26	43	37	32
1827	36	32	28	45	34	30	37	31	25	43	32	25
1828	42	30	25	44	36	28	48	38	33	48	40	32
1829	54	45	35	45	35	32	46	36	32	37	30	27
1830	40	35	30	50	38	32	60	50	40	70	60	48
1831	70	60	48	70	60	50	75	65	50	70	60	50
1832	65	55	44	60	52	42	50	42	30	50	40	30
1833	55	41	33	63	53	38	61	54	40	65	55	45
1834	70	60	48	67	56	44	60	50	40	62	50	40
1835	63	50	40	65	60	45	63	56	42	65	60	45
1836	65	60	45	68	62	47	70	60	50	70	60	50
1837	72	63	48	68	56	46	52	52	36	49	40	31
1838	50	42	35	50	42	35	46	36	30	56	48	37
1839	56	48	38	56	48	38	57	48	40	60	55	44
1840	50	45	38	49	43	36	45	39	33	46	38	33
1841	52	45	35	53	46	37	50	44	34	48	42	33
1842	48	42	35	46	40	32	43	37	30	38	31	25
1843	35	30	25	33	28	25	35	30	26	36	32	26
1844	37	30	26	43	36	30	45	37	32	50	40	33
1845	47	40	31	45	38	32	40	36	30	38	35	28
1846	40	35	30	38	33	28	38	32	27	36	30	22
1847	45	40	30	47	40	31	46	40	31	47	40	30
1848	45	38	30	43	37	30	38	32	28	33	30	24
1849	33	30	23	40	36	30	40	35	28	42	36	30
1850	47	40	33	45	37	30	45	37	30	46	40	35
1851	46	40	33	50	44	36	47	42	37	45	40	35
1852	43	38	34	42	36	33	45	38	33	50	42	37
1853	58	56	50	62	56	50	60	53	48	55	50	48
1854	53	47	42	57	52	46	45	37	30	42	36	30
1855	40	35	32	43	35	32	50	40	33	52	41	36
1856	50	38	35	57	45	38	55	42	36	60	55	45
1857	58	50	42	60	56	45	56	50	40	38	30	25
1858	40	33	27	42	35	30	43	37	30	56	41	36
1859	60	52	45	60	46	37	56	40	35	60	50	42
1860	60	50	42	52	45	40	55	50	40	50	45	40
1861	45	40	37	45	37	32	38	30	22	47	48	50
1862	48	50	50	46	45	43	48	47	45	60	60	63
1863	75	68	70	80	85	80	75	70	65	85	80	76
1864	80	78	76	78	77	72	100	100	90	103	95	100
1865	102	100	96	80	80	75	75	73	65	75	75	65
1866	70	65	50	65	60	48	70	67	60	63	60	56
1867	68	53	50	60	55	50	55	49	45	48	46	40
1868	48	43	38	50	48	45	46	45	43	48	48	45
1869	50	50	48	50	50	48	48	48	47	48	48	46
1870	48	46	44	48	47	46	46	45	43	48	48	44
1871	47	46	43	50	52	47	62	60	55	63	62	58
1872	70	72	66	80	80	76	72	70	65	66	60	57
1873	70	68	65	56	53	48	50	48	44	54	53	47
1874	58	54	47	56	56	47	53	53	46	54	54	47
1875	55	56	47	54	52	46	52	49	46	48	50	42
1876	48	52	42	46	49	40	38	35	31	45	40	33
1877	46	43	36	45	40	33	50	44	37	48	44	36
1878	44	45	38	40	42	35	36	36	32	35	37	32
1879	34	35	32	34	34	31	37	38	34	41	43	38
1880	50	55	48	55	60	52	46	48	42	46	48	42
1881	47	49	43	40	44	37	42	44	36	43	46	36
1882	44	46	47	42	45	34	42	45	34	42	45	34
1883	40	43	33	44	44	37	39	41	33	39	40	34
1884	40	40	34	38	38	34	35	34	30	35	34	30
1885	34	33	29	32	32	28	32	31	28	33	35	32
1886	35	36	32	33	34	30	33	33	29	35	38	34
1887	33	38	34	33	37	33	34	37	34	32	36	34
1888	31	35	33	31	34	33	29	33	31	31	34	31
1889	34	38	33	33	37	31	35	39	32	33	37	31
1890	33	37	29	33	36	29	33	37	29	33	37	31

This table shows a great variation of prices, and yet wool for a long series of years has been more constant in price than most of the agricultural and mineral products of Ohio. It has kept more closely to

the standard of all commercial values, gold, than have the prices of the products of any other great American industry. This has been demonstrated by Hon. O. G. Cope in a paper read before the Farmers' Institute at Cadiz, Ohio, January 3, 1887, and what here follows is a restatement of a portion of his paper. He asserts that wool was the most reliable crop produced in Ohio, both in the constancy of its production and the constancy of its price. From 1870 to 1885 16 per cent was the greatest variation in any one year from the year immediately preceding, and that marked an increase. From 1870 to 1883 the greatest per cent of variations in the yearly productions of the following farm products were:

Greatest variation in—	Per cent.
Wool	16
Oats	32
Corn	41
Hay	47
Wheat	77
Potatoes	88

The greatest variation in the production of wool was one-half as great as that of oats, about one-third as great as that of corn or hay, not one-fourth as great as that of wheat, and not one-fifth as great as that of potatoes. From this it may be seen that there is not one of the leading farm products which compares favorably with wool for constancy of production.

The greatest variation which occurred in the amount of wool produced was during the year 1880, when there was an increase of 16 per cent over 1879. It would be reasonable to suppose that the hay or corn crops, or perhaps both, of the previous year were abundant, but such does not appear to be the fact. There was a decrease of 16 per cent in the amount of hay, and 15 per cent in that of corn the previous year. The records do not show any evidence of the annual amount of wool produced being materially affected by the abundance or partial failure of any other crop. Neither frosts nor drouth, nor excessive rainfall, seem to materially affect the production of wool.

In the constancy of prices the same advantage is shown in favor of wool. By reference to the preceding prices of Ohio wools from 1824 to 1890, and adopting as our standard the average prices of fine and medium wools for the quarter beginning with July 1 and ending with September 30 for each year, we have the following table of prices from 1864 to 1890:

Wool, per pound.

Year.	Price.	Year.	Price.	Year.	Price.
1864	$0.99	1873	$0.49	1882	$0.44
1865	74	1874	53	1883	40
1866	68	1875	51	1884	35
1867	52	1876	37	1885	32
1868	46	1877	47	1886	33
1869	48	1878	36	1887	36
1870	46	1879	38	1888	32
1871	61	1880	47	1889	37
1872	71	1881	43	1890	35

The greatest variation here shown occurred between the years 1864 and 1865, when there was a reduction of 26 per cent. This was a phenomenal year in the wool trade, caused by the close of the war, heavy importations, and a large stock of woolen goods on hand in factories, with but small demands. Excluding this year, the greatest change in any one year was in 1873, when the decline from the preceding year was 22 per cent. The greatest discrepancy in prices is shown in comparing the years 1864 and 1885. In the former year wool was $1.00; in the latter, 32 cents.

The following will show the average price of a bushel of wheat according to the report of the Chamber of Commerce of Cincinnati:

Wheat, per bushel.

Year.	Price.	Year.	Price.	Year.	Price.
1864	$1.41	1870	$1.14	1876	$1.10
1865	1.78	1871	1.27	1877	1.41
1866	2.27	1872	1.57	1878	1.11
1867	2.29	1873	1.56	1879	.95
1868	1.91	1874	1.37	1880	1.16
1869	1.57	1875	1.16	1881	1.09

The greatest variation in prices here shown was in 1866, when wheat advanced 49 cents a bushel, or 28 per cent, and in 1870, when it declined 43 cents, or 38 per cent.

Between the same years, 1864 to 1881, the greatest variation in oats was 35 per cent; in corn, 52 per cent; in hay, 53 per cent. A comparison with hogs and beef cattle shows quite as favorably.

The report of the Chamber of Commerce of Cincinnati gives the average prices of hogs from 1864 to 1881, as follows:

Hogs, per 100 pounds.

Year.	Price.	Year.	Price.	Year.	Price.
1864	$5.60	1870	$9.46	1876	$7.27
1865	11.69	1871	5.50	1877	5.90
1866	9.57	1872	4.36	1878	4.19
1867	6.02	1873	3.92	1879	2.86
1868	6.60	1874	4.58	1880	4.36
1869	8.41	1875	6.99	1881	4.61

Here the greatest variation was in 1865, when hogs advanced 109 per cent, and in 1879, when they declined 68 per cent. The extremes of prices are found in these two years of 1865 and 1879. In the former year hogs were $11.69; in the latter $2.86. In 1865 a hog sold for more than four times the price it could command in 1879. The greatest extremes of wool were, as shown, $1 and 32 cents, or slightly more than three times higher at its highest figure than at its lowest.

Beef cattle, per 100 pounds.

Year.	Price.	Year.	Price.	Year.	Price.
1864	$5.74	1870	$5.85	1876	$3.95
1865	7.45	1871	5.05	1877	3.50
1866	7.55	1872	4.78	1878	3.50
1867	7.27	1873	4.09	1879	2.98
1868	7.27	1874	3.90	1880	2.83
1869	5.62	1875	4.30	1881	3.45

Here the greatest variation from one year to another is found in 1865, when beef advanced $1.71 per 100, or 29 per cent, and in 1869, when it declined $1.65, or 29 per cent. The extremes were $7.55 in 1866, and $2.83 in 1880.

A summary shows this result:

Greatest variation in price of—	Per cent.
Wool	26
Wheat	28
Oats	35
Corn	52
Hay	53
Hogs	109
Beef	29

When the average value of currency in New York is considered, the variation becomes less apparent. During 1864 the average value was 51 cents per dollar. During 1865 the average value was 69 cents a dollar, or a variation of 35 per cent, showing less stability than that of wool, which varied in the same period 26 per cent.

If the prices of all articles of commerce kept the same relations to each other, whether moving upwards or downwards, compared with currency, there is neither injury nor benefit done to any industry by the movement. Since 1864 there has been a general downward movement of prices of almost all products, and the relations of prices have been disturbed. Whether the wool industry has been injured or benefited by the movement will now be shown by comparing the reduction of prices of different products from 1864 to 1881. This period of eighteen years will be divided into two periods of nine years each, and an average of prices obtained for each period. The difference between these averages will indicate the decline in prices for each product. The following will show the average price of products for each period of time, and the reduction of prices:

Products.	First period.	Second period.	Reduction.
			Per cent.
Wool, pound	$0.59	$0.43	0.27
Oats, bushel	.54	.37	.31
Hogs, 100 lbs	7.46	4.96	.33
Wheat, bushel	1.73	1.10	.36
Coal, do	.21	.13	.38
Iron, ton	49.00	28.00	.43
Corn, bushel	.74	.45	.39
Beef, 100 lbs	6.29	3.63	.42

From this it may be seen that relatively the prices of wool have appreciated, and that the sheep industry of Ohio has been benefited by the downward movement of prices as no other great industry has.

A comparison of the average prices of gold and currency in New York from 1864 to 1890, and also the average prices of Ohio wool in gold and currency for the same period may be considered, and for convenience may be divided into three series of years. First, the period of suspension of specie payments, including the years 1864 and 1878, inclusive; second, the period of resumption of specie payments up to the time of the revision of the tariff laws, which made a reduction upon foreign imports of wool, including the years 1879 and 1882, inclusive; third, the period under the revised tariff laws, including the years 1883 and 1890, inclusive.

First period.

Year.	Prices of gold and currency.		Prices of wool in currency and gold.	
	Gold.	Currency.	Currency.	Gold.
1864			$1.00	$0.42
1865	$1.42	$0.70	.74	.51
1866	1.48	.68	.68	.43
1867	1.41	.70	.52	.34
1868	1.40	.71	.46	.34
1869	1.33	.71	.48	.35
1870	1.16	.85	.66	.38
1871	1.12	.89	.61	.54
1872	1.13	.88	.71	.64
1873	1.15	.87	.49	.43
1874	1.10	.90	.53	.47
1875	1.14	.87	.51	.45
1876	1.10	.90	.37	.35
1877	1.04	.96	.47	.45
1878	1.01	.99	.36	.35

This shows that from 1864 to 1878, during the period of the resumption of specie payments, the average price of wool was 55.93 cents in currency and 43.06 cents in gold.

Second period.

Year.	Prices of gold and currency.		Prices of wool in currency and gold.	
	Gold.	Currency.	Currency.	Gold.
1879	$1.00	$1.00	$0.38	$0.38
1880	1.00	1.00	.47	.47
1881	1.00	1.00	.43	.43
1882	1.00	1.00	.44	.44

For this period of four years the average price of Ohio fine and medium wools was 43 cents, both in gold and currency.

Third period.

Year.	Price.	Year.	Price.
1883	$0.40	1887	$0.36
1884	.35	1888	.32
1885	.32	1889	.37
1886	.33	1890	.35

This shows an average of 35 cents per pound from 1883 to 1890, covering the period under the revised tariff of 1883.

The average prices of wool during these three series of years reduced to a gold basis are thus shown:

	Cents.
During the suspension of specie payments	43.06
After resumption and before the revision of the tariff in 1883	43.00
From the revision of the tariff in 1883 until 1890	35.00

It is not the intention to discuss these figures and the preceding tables. They speak for themselves. They show that wool has been more constant in production and more stable in price than any product of Ohio, and that while all other farm crops have suffered a great reduction wool has suffered less than any. There has been a more marked depression since 1883, but this depression has been felt by all other farm products and in every State and Territory in our broad land.

Table showing the number and value of sheep in Ohio from 1840 to 1890.

Year.	Number.	Value.	Year.	Number.	Value.
1840	2,028,401	$1,283,386	1868	7,088,845	$14,819,353
1846	3,141,946	1,758,433	1869	6,272,640	10,780,364
1848	3,677,171	1,988,316	1870	4,928,635	9,364,506
1850	3,942,929	2,050,323	1871	4,302,904	8,062,699
1851	3,619,674	2,060,012	1872	4,464,898	13,843,801
1852	3,059,796	3,581,385	1873	4,596,864	11,710,407
1853	4,104,450	6,443,391	1874	4,333,858	10,652,067
1854	4,854,189	8,031,854	1875	4,100,288	10,173,046
1855	4,337,943	5,664,829	1876	3,854,528	8,849,574
1856	3,513,680	5,009,410	1877	3,724,040	8,382,428
1857	3,276,539	5,357,275	1878	3,909,604	8,578,123
1858	3,377,840	4,755,215	1879	4,267,261	9,311,972
1859	3,366,073	5,442,984	1880	4,902,486	12,581,427
1860	3,546,073	6,029,503	1881	4,923,174	13,384,257
1861	3,943,436	6,681,427	1882	4,594,607	13,383,249
1862	4,448,227	7,839,041	1883	5,089,363	13,249,166
1863	5,042,439	14,337,056	1884	5,113,884	11,940,720
1864	5,560,318	17,502,657	1885	4,823,922	9,345,819
1865	6,305,796	22,088,176	1886	4,277,463	8,888,430
1866	6,966,028	20,081,944	1890	3,943,589	11,909,638
1867	7,555,507	20,360,302			

The Statistician of the U. S. Department of Agriculture reports in January, 1890, that in Ohio in the preceding year "there has been an unusual demand for sheep, saving thousands from slaughter, and giving a healthy tone to the industry," and in January, 1891, "sheep have increased in numbers and quality, the mutton breeds having the lead."

He reports a gain of 406,170 sheep from January 1, 1891, to January 1, 1892, and an increase in value during the same period from $3.25 to $3.30 per head. Sheep—prime mutton—found ready sale, and, competition being more restricted than with beef, prices ranged with profit to feeders. Wool, however, was lower than for years. The tendency still continued to cross fine-wool sheep with Lincoln, Shropshire, and other large mutton breeds, aiming to secure large lambs for early feeding.

INDIANA.

At the first settlement of this State there were two varieties of the so-called common sheep introduced. First, the sheep from the Eastern States, small, beautiful, and hardy, giving 2½ to 4 pounds of wool. It lived in the woods, generally took care of itself, was very prolific, and made fair mutton, for which, however, it was but little used, being raised principally for the wool used in the family manufacture. There was another variety of sheep imported first into Georgia, then into North Carolina, and thence to Morgan County, Ind., at its first settlement. From Morgan, as a center, it spread into the southern interior counties. This sheep was known as the Moravian. It had a brown nose and a face similar to the Southdown. The wool was very white, and on the hams was mixed with hair.

There were a few Merinos introduced into Indiana while it was yet a Territory. In a very few cases they were full-bloods; some were high grades. The earliest full-blood flock was that of George Rapp. In 1814 Mr. Rapp moved his flock from Harmony, Pa., to New Harmony, on the banks of the Wabash River in Posey County. Here large tracts were devoted to sheep-grazing and wool-growing, and the manufacture of woolens was set up, which consumed the wool grown by the flock and also that grown for many miles around in Indiana and Illinois. Wool from Kentucky, Tennessee, and Mississippi was also sent to this factory. In 1824, Mr. Rapp and the community of which he was the head, removed to Economy, Pa., taking most of the Merino flock with him; but its stay of ten years in southwestern Indiana had done much to supply that region and southeastern Illinois with many full-blood and half-blood sheep. A few were carried across the Ohio River into Kentucky.

The Merinos found their way gradually into the southeastern part of the State by the river counties of Ohio and from the flocks of Washington County, Pa. There were some in Franklin County as early as 1819, and in the following year Pegg & Davis, of Brookville, advertised wool carding, both common and Merino wool, having a new machine from the East and hands experienced in the business. Other carding machines were put up on the West Fork of the White River, and their owners solicited the patronage of the public in carding Merino and common wool grown in southeastern Indiana and southwestern Ohio.

From 1820 to 1840 the progress of fine-wool industry in the State was very slow; in fact it may be said that there was no progress. A few Ohio half-bloods and Michigan grades were brought over the borders, and an occasional Pennsylvania sheep came down the Ohio to the river counties, but very little was done to improve the breed of sheep—the coarse-wooled, leggy, and light-bodied sheep of the country. Wheat, corn, and hogs were the principal crops of the Indiana farmer, and he

raised scarcely enough coarse wool to keep his family in woolen goods. In 1840 there were 657,982 sheep in the State, yielding 1,237,919 pounds of wool, or a trifle less than 2 pounds per head. From this time there was a great advance in the number of sheep and quality of the wool. Some high-grade Merinos were brought into the northern counties from Michigan, and into the southeastern counties from Ohio and Pennsylvania, and by 1845 there were Spanish Merino grades, Saxony grades, and half and quarter-blood Wells and Dickinson and Washington County, Pa, sheep. The Spanish Merino grades came principally from Michigan and Ohio, the Saxon grades from western Pennsylvania.

In 1845 Dr. A. C. Stevenson and Alexander Black introduced into Putnam County two flocks of fine-wooled sheep, from which many rams were subsequently sold, to the great improvement of the common flocks of the country. Dr. Stevenson's flock was pure-blood Spanish Merino, and said to have been the first full-blooded flock of the kind introduced into the State. His clip of wool in 1853 sold for $3,000, which indicates that his flock then numbered over 1,500 head. It is hardly possible that they were all full-blood sheep. The flock was dispersed about 1860. The flock of Mr. Black was from Washington County, Pa., and either full or high-grade Saxon; probably a Spanish Merino and Saxon cross, then in high repute in western Pennsylvania. This flock was kept up many years and yielded 2¾ pounds of well-washed tagged wool. In 1853 his clip sold for $4,000, which, with wool at 60 cents, would indicate a flock of nearly or quite 2,500 head. In 1856 this flock was considered the best fine-wooled flock in the State, and in 1867 could hardly be excelled in the United States. It had usually carried away the premiums at the State fairs. From these two flocks many smaller flocks were formed in Putnam County, which soon became the center of the fine-wool industry of the southern middle of the State.

In 1850 the number of sheep in the State was 1,122,493, yielding 2,610,287 pounds of wool, or an average of 2.32 pounds per head. The number of sheep had almost doubled in ten years; the yield of wool had more than doubled, and the yield per head had increased one-third of a pound, due entirely to the improvement of the sheep. Indiana, however, could scarcely be called a fine wool-growing State. Her principal crops were corn, wheat, and hogs. The introduction of high-class sheep was not general, and investigation showed that, in most of the counties of the State, wool was grown for family use only; to grow it for market was not considered profitable. In Tippecanoe County a few of the fine-wooled sheep had been introduced, but through careless breeding they had degenerated. The prairies were unsuited to them. In Elkhart County a few enterprising farmers had brought some Michigan Merinos and crossed them with common sheep for wool and mutton together. M. R. Hull, of Fayette, had some Merinos which sheared him 4 pounds of wool per head. Laporte County flocks were on the increase; there were 25,000 sheep, averaging 2¾ pounds of wool,

and they were of every grade from full-blooded Spanish and French Merino down to common sheep. There were but few Saxons and no English sheep. Chicago furnished a market for mutton. John Owens introduced the Merino into Monroe, but his flock degenerated from breeding in-and-in, and there was no pure blood from which to breed. In Hendricks County the people did not engage in wool-growing to any extent beyond the demand for home consumption, and took more interest in raising hogs. The same was the case in Marion and Jay. In many counties the dog was charged with the indifference to sheep raising. In those localities near large cities the mutton sheep was the most popular. Hendricks had Oxfords, Cotswolds, Leicesters, and Southdowns, which were sold at Indianapolis, and the surplus found its way to Cincinnati. In Greene County large-sized sheep were found most profitable both for mutton and wool, a medium quality between coarse and fine wool being most preferred for domestic fabrics. A profit was made in raising a sheep and selling it for $1.50. St. Joseph County, on the Michigan border, preferred large sheep, or a mixture that would produce good-sized sheep and a fair grade of wool. Wool-growing exclusively was not profitable, and mutton raising was the most prominent.

From 1850 to 1860 there was a great decrease in the number of sheep, the falling off being more than 130,000. The yield of wool, however, decreased but 58,000 pounds, while the average yield per head went up to 2.57 pounds as against 2.32 in 1850.

The increase in the amount of wool per head was due to two causes, the gradual crossing of the Merino grades on the common sheep for one, and the introduction of heavy, long fleeced and middle wooled sheep for another. There were some full-blood Merinos introduced, but in few localities only. Lagrange, Allen, Elkhart, and some other counties increased in fine sheep, and at the State fair in 1855 there was a respectable showing of Saxonies, French, and American Merinos, and crosses between them, and also some fine Southdowns, Leicesters, and Cotswolds. Putnam County kept up its two fine flocks, and Black's Saxony sheep sold for $10 to $20 a head, while common sheep brought only $1. There were, however, but few pure-blood sheep of any kind in the State, and these few were in the possession of the most enterprising. Many causes combined to produce the decrease in the number of sheep, the prime cause being found in the fact that the native breeds produced but little wool, and that of an inferior quality. This wool commanded a low price and the low price of woolen goods compared with former years inclined it still lower. Another great cause was the rise in land, farm products, and live stock, especially cattle and hogs, making the rearing of sheep, either for wool or mutton, a very unprofitable business as compared with others. And to these must be added the dogs. The mutton breeds continued to come into the State, and in 1860 it was

difficult to find a flock in most counties that did not bear marks of them. There are reasons peculiar to the climate and soil why the Merino has never obtained a general foothold in Indiana, and one of these is given in an address by Hon. Lee McDaniel, in 1881:

> The Merino as a breed can not be grown successfully on a great portion of the soil of Indiana, because it is too low and black; their hoofs will grow crooked in spite of every effort in trimming. They will take the foot rot and scab. So you see we must cross if we expect to retain any of the blood of this valuable little animal.

At a time when nearly every county in the country had its sheep-shearing festival Indiana was not backward, but the records are wanting. A record of scoured fleeces and the shrinkage is preserved. In 1865, in Parke County, several Merino fleeces were scoured and dried at a woolen factory in the vicinity, and weighed accurately before and after scouring:

Age.	Weight of carcass.	Gross weight of fleece.		Scoured weight.	
	Pounds.	*Lbs.*	*Oz.*	*Lbs.*	*Oz.*
Two years	78	10	6	4	2
One year	90½	10	7½	4	3
Two years	126	10	11½	4	6
Do	96	15	1	4	5
One year	74	8	8½	3	1
Four years	107½	9	13½	3	15
One year	67	8	1	2	15
Four years	162½	15	3½	4	12½
One year	70½	14	5½	3	7½
Do	50	8	7	3	9

The 10 fleeces averaged as shorn 11 pounds 1 ounce, as cleaned 3 pounds 14 ounces, a shrinkage of over 65 per cent, or not quite two-thirds waste to one-third wool.

The demand for wool caused by the war increased the number of sheep from 1860 to 1865 100 per cent. But when the war closed and wool fell in price there was a great reduction. Whole flocks were sold out and the farmers' attention was turned to corn and hogs and dairy products. But, on the whole, there had been an increase from 991,175 sheep in 1860 to 1,612,680 in 1870, notwithstanding the great loss from 1865 to 1870. The tariff act of 1867 did not arrest the decline, and there was a loss from 1870 to 1880 of over 500,000, or more than 33⅓ per cent. And notwithstanding this loss in the number of sheep the wool clip of 1880 exceeded that of 1870 by over 1,000,000 pounds.

The Merinos have constantly decreased, and they are not a ruling factor in wool-growing in Indiana. There are some good breeding flocks and some grades, but they are in small proportion to the other breeds and their crosses. The low price of wool had something to do with their general disappearance, but more was due to the greater profit in raising fat sheep for market. This is a great industry in the State. The rapid development of manufactures, the growth of villages to towns, of towns to cities, and the increasing consumption of mutton,

have fostered this branch of sheep husbandry. Many of the farmers engaged in this business do not raise the sheep thus handled upon their own farms. They are picked up on farms 20 to 40 miles from home, sometimes from outside of the State and beyond the Mississippi. Three-year-old wethers are preferred for this purpose, as they have attained about the proper size and age to fatten advantageously. The general run must weigh over 100 pounds, and medium wools are preferred, as the farmer must depend for his profit on both the mutton and wool. Many farmers buy from 50 to 200 annually, fatten them through the winter on their surplus hay and grain, and turn them off in the spring at a good profit.

Not only do the farmers expect and generally realize a good profit on the sheep by using their hay and grain without the expense and trouble of finding a market for these crops, but they thus convert them upon their farms into large quantities of superior manure, which has a cash value to them in restoring to their lands the fertility that has been lost by years of continuous cropping. And experience has shown that the farmers pursuing this course get as good prices for their corn as if it were fed to hogs. Raising early lambs for the city markets receives much attention from those situated near cities or on roads running to them. For this purpose common or Merino grade ewes are purchased in the late summer or early fall, put with a Southdown or Shropshire ram, the lambs sold at from $3 to $5, and the ewes fattened on pasturage and sold off later. This system follows that pursued in New Jersey and other parts of the East. But the preferable course of the Indiana farmer is a combination of wool and mutton. In order to gain the greatest, and we might say the requisite, amount of profit, he must raise a sheep combining a growth of wool with a growth of mutton; one that will net him the most pounds of marketable mutton, and a good grade of wool. The wool should pay for the keeping, and the lambs pay a good interest on the money invested. He can go into the market in the fall with $100 and buy 20 common ewes for $75, and a ram for $25 of some of the mutton breeds. These bred all winter with good care will give him 20 lambs, which, at the end of a year from the time he started, can be sold at $3.50 to $4.50 per head. At the lower price, or $70 for 20 lambs, there will be realized a return of 70 per cent on the original investment, and the flock is left. The wool, even at its lowest price, can be counted on to pay the cost of keeping. But if the sheep are raised alone for mutton there must be deducted from the sale of lambs at least $30 for expense, leaving only $40, or 40 per cent on the investment. This combination of wool and mutton most of the Indiana farmers believe they have found in the Shropshire sheep, and it is the belief in that combination that makes the sheep so popular in the State, where they are increasing with a rapidity that threatens to drive out all other sheep. Their mutton is considered nearly as good as that of the Southdown, while their wool is much larger and nearly

as fine. As an average the fleece will weigh 8 pounds, while that of the Southdown will not exceed 6 pounds. They are claimed as shearing as much money per head as the wool breeds, so called, and every way superior to them for mutton. They stand close herding in large numbers; are quiet, very strong and healthy; are exceptionally free from foot-rot; require no extra feed and but little care, and upon the whole will give large returns with the least trouble. They weigh from 170 to 300 pounds. One is on record as weighing 400 pounds. An Indiana breeder reports one as weighing 328 pounds at two years old, and giving 18 pounds of medium, delaine, and half-combing wool. They have been found very prolific, producing at least 40 per cent of twins. The lambs are strong, are on their feet nearly as soon as dropped, and give but little trouble. Many farmers are grading up their flocks by using large, well-shaped, and woolly rams of this breed. Breeding-flocks abound in the State to supply the demand, and the importation from the best of English flocks is constant.

Indiana is the home of the American Shropshire Association, and here seems the proper place to note the origin and early history of this breed of sheep so popular in the West, and, indeed, throughout the Union wherever sheep husbandry receives attention. The Shropshire is the direct result of the application of science in the hands of progressive men, working continuously on natural laws for the improvement of good breeds, and at times producing new ones of superior merit.

The old sheep of Shropshire were of many breeds, but time and circumstances gave them a more equal character. Many of these breeds have passed away; some of them yet remain, but in an improved condition. These were originally horned and with black or mottled faces and legs. They were about the size of the Southdown, but the neck was longer and the carcass not so compact. They were hardy and rarely had food given them in the winter, except in a deep snow. At the beginning of this century the Shropshire sheep weighed from 14 to 16 pounds per quarter; the fleece of the wether about 2½ pounds, but that of the ewe not more than 1¾ pounds. They were sometimes crossed by the Dorsets, by which the carcass was increased to 18 to 20 pounds the quarter and the fleece to 3 or 4 pounds, but the quality of both was deteriorated. They were, however, thought to pay the farmers better than the old breed.

The common mountain sheep of Shropshire were smaller, being scarcely more than 10 or 12 pounds to the quarter; but the wool was finer, and sold at a somewhat higher price.

The Long Mynd or Mound sheep were horned, with black faces, weighing about 12 pounds the quarter, the wool being very little inferior to that of the common mountain sheep.* Youatt says that the sheep, however, which was the pride and boast of Shropshire, and scarcely excelled in fineness of wool even by the Ryelands, was the

*Youatt.

Morfe Common sheep. This tract of land is situated on the borders of the Severn, near Bridgenorth, and contains nearly 4,000 acres. The ewes were fed on the common from the middle of June to October, when the young sheep were brought on it for the winter. From the shortness of the pastures and the quantity of furze about the common the sheep began to lose their teeth at five years old, and were then disposed of.

The Morfe sheep had small horns, with speckled, dark, or black faces and legs; the wether weighing about 13 pounds, and the ewe 9 pounds the quarter, and the fleece weighing about 2 pounds. In many points resembling the Ryeland, if indeed not a variety of that breed, it had been found from time immemorial in various parts of Worcestershire, Shropshire, and Staffordshire. It was probably this species of Shropshire wool that in 1343 was the choicest and the dearest in England, and at every succeeding period, when mention has been made of it, justice has been done to its excellent quality. It has now shared the fate of every short-wooled fleece. The importation of a better material and the tyranny of fashion tempted the farmer to cross even this breed with a heavier sheep; and the experiment, however it may have answered to him in a pecuniary point of view, materially changed the character and the destiny of the Morfe fleece.

In 1792, when the British Wool Society procured all the information possible regarding the sheep of England, they reported that on Morfe Common there were about 10,000 sheep kept during the summer months which produced wool of a superior quality. They were considered a native breed; were black-faced or brown or spotted faced, horned sheep, little subject to either rot or scab; weighing, the wethers from 11 to 14 pounds, and the ewes from 9 to 11 pounds the quarter.

Upon this and other evidence Professor Wilson concludes that the original stock from which the present breed of Shropshire Downs sprung was the old Morfe Common, and as the country advanced and the breeds became valuable for their carcasses as well as for their wool, the Morfe Common sheep were crossed with other breeds, but more particularly with the long-wooled Leicester and Cotswold or the short-wooled Southdown. The admixture of such different blood has produced a corresponding variation in the character of the present breed of Shropshire Downs, and tended materially to sustain the hesitation which long existed to allow them a place as a distinct breed. Where, however, the original cross was with the Southdown and the breed has been continued unmixed with the long-wooled sheep, they present the characteristics of a short-wooled breed.*

This view is not universally shared, and it is not unhesitatingly acknowledged that the Shropshire Down is a pure sheep descended from the Morfe Common. It is held by many that, though modern sheep in their improved character, the original stocks were the Long

* Prof. John Wilson, in Journal of the Royal Agricultural Society of England, Vol. XVI.

Mynds in Shropshire and the Cannock Chase of Staffordshire, and they bring forward evidence to sustain their position. About 1858 Mr. Tanner made an agricultural survey of Shropshire and paid particular attention to its sheep, and his conclusion, after much inquiry and personal investigation, is thus expressed: "For my part I do not consider them a pure breed, but a cross-bred animal from the original Long Mynd or old Shropshire sheep." Plymley, who published in 1803 a general view of the agriculture of Shropshire, says:

> There is a breed of sheep on the Long Mynd with horns and black faces that seem an indigenous sort; they are nimble, hardy, and weigh near 10 pounds per quarter when fatted. The fleeces upon the average may yield 2½ pounds, of which one-half pound will be the breechens or coarse wool, and is sold distinct from the rest. The farmers of the hill country seem to think the greatest advantage they derive from the access of foreign stock is from the cross of the Southdown with the Long Mynd sheep; the produce they state to be as hardy and to bite as close as the Long Mynd sheep; and the weight of the carcass is increased.

From this positive statement of an observer in the beginning of the century and from his own observations nearly sixty years later, Tanner thought it evident that this cross of the Southdown and the Long Mynd was an early favorite, and that the practice continued could not be doubted, for it was well known that first-class flocks of pure Southdowns were kept in Corfe Dale, and annual ram sales were held for very many years until they were gradually superseded by the improved Shropshire Down, and at the time Tanner wrote Southdown rams from the best breeders still found their way from the east of England to Shropshire. Even those flockmasters who claimed to be holders of the original breed could give no proof of purity of blood for twenty-five or thirty years.

Spooner, in his essay on cross-breeding, is explicit in his statement that the Shropshire is "undoubtedly a cross-bred animal, and indeed affords a striking example of the perfection that can be derived from a judicious mixture of various breeds," and he quotes Mr. Meire, a breeder, who at a meeting of a farmers' club in Shropshire, 1858, observed:

> It is not attempted to be denied that the Shropshire is a cross-bred sheep. The original breed was horned, and the first attempt at improvement was to get rid of these incumbrances, and there is little doubt that this was effected by a cross of the Southdown. This sheep was well adapted for the Downs, but for the inclosures of Shropshire something more docile was required, consequently recourse was had to the Leicester.

This crossing and recrossing at length gave place to the practice of careful selection, "and thus," says Spooner, "uniformity was sought for and attained, and the present superior breed was established. It is now held that no further cross is required."*

Those who hold that some of the improved Shropshires are from the Cannock Chase sheep point to many facts, among others that the dry

* W. C. Spooner on Cross Breeding. Journal of the Royal Agricultural Society, Vol. xx.

surface of Cannock Chase and its good climate favor a heavier heath sheep than occurs elsewhere, and that the original sheep had a short light fleece of about 3 pounds, and a carcass which might be fattened at three years old to eight or nine stone, and that their descendants, crossed by the Southdowns, whilst retaining the same hardy character, are much larger, mature earlier, yield a heavy fleece, and a frame weighing ten stone at thirteen months without extraordinary treatment. Stafford adjoins Shropshire. Southdown rams were brought into both about the same time and crossed with native ewes; the produce crossed on each other, and thus the Cannock Chase blood became infused in the improved Shropshire Down.

These facts are held to be conclusive by many, that it is to the Southdown chiefly, though not entirely, that the present form and character of the Shropshire are due; indeed, about the only objection that could be urged against the breed up to 1875 or 1880 was that, although for the twenty years preceding it had received much attention, there was still a lack of uniformity; but this defect has now almost entirely disappeared, as breeders are at last tolerably agreed as to the particular type that is most desirable. "The variety," says John Coleman, "could only be accounted for by the supposition that different crosses in different proportions had been tried; and we think there is no doubt this had been the case."

The disputed origin of the Shropshire has elicited much controversy. We have stated the position occupied by leading men on either side, thinking, however, with some of them, that the differences of opinion appear very unimportant; for if the Shropshire is not an original breed, it is very certain that it is an established breed, and that its character and peculiarities can be perpetuated most satisfactorily. In fact, the rapidity with which this breed has risen into favor is very strong evidence of the general estimation in which it is held. Only a few years since any mention of the Shropshire Down raised an inquiry, even amongst intelligent English agriculturists, as to their character. Now it is known as a sheep combining the symmetry and quality of the Southdown with the weight of the Cotswold, and possessing the fattening tendency of the Leicester, without its delicate constitution.

Economical merit is usually promptly recognized in England, but it was not until 1853 that this was the case with Shropshire sheep, and then but partially. In that year, when they were exhibited at the Royal show-yard at Gloucester, their general superiority was apparent, and from that time breeders were awakened to use careful judgment in breeding and selecting flocks, which gradually brought them to the front. At the great national show in 1857, at Salisbury, England, sweepstake prizes were awarded to Shropshire rams "Celebrity," "Patentee," and "Earl of Salisbury." But a great impetus was given to Shropshire breeders when the Royal Agricultural Society recognized

the importance of the breed by giving it a separate class, which was first done at the Canterbury show in 1860, at which time 192 Shropshires were exhibited with marked success. Coleman says the wisdom of this step has been abundantly illustrated by the numbers and quality of the entries at all subsequent shows, which have for many years past far outnumbered any other breed. One reason for the difference of character which so long prevailed may be found in the fact that, while many breeders achieved from time to time prominent positions, there was no one in early days who took such a decided lead as to impress his type permanently, as was the case with the Leicesters and Southdowns.

Mr. Alfred Mansell, of College Hill, Shrewsbury, in Shropshire, most excellent authority, says that since 1859, despite the great prejudice and opposition of exhibitors of other breeds, the Shropshires have steadily increased in number at the Royal shows, culminating in the grand display of 1884 at Shrewsbury, "when 875 Shropshires were exhibited against 420 Southdowns, Hampshires, Lincolns, Leicesters, Cotswold, Mountain, and all other distinct breeds, being considerably more than double the number of all other breeds, and demonstrating very conclusively that the Shropshire is a sheep that meets the requirements of the day, and surely is the coming race."

Another fact worthy of notice is that this breed seems to thrive and become acclimatized in all places if properly cared for, as is proved by the success of exhibitors extending over a wide area, noticeably at the Royal show of Shrewsbury in 1884, the exhibitors of this breed numbering no less than sixty, and hailing from fifteen counties, including Ireland, whereas the best that can be said of any other distinct breed is that the Southdowns came from eleven breeders in six counties; and by experience of others who have seen the breed flourishing in every country—in England, Scotland, Ireland, the United States, South America, Canada, the colonies, France, Germany, Greece, and most other continental countries whose soil and surroundings differ to a great extent. This power of acclimatizing itself, no doubt, has not escaped the notice of foreigners, who of late years have exported the breed largely.

The precise process of forming a flock of Shropshires, one that carried off many prizes, may be learned from the experience of Samuel Meire, of Birlington. Mr. Meire was an excellent judge of stock, and set to work upon the coarse Shropshire, going chiefly for three points —straight spine with well-sprung ribs, oblique shoulders, and good rumps. These points could not be obtained by cultivation or selection alone, and Mr. Meire introduced the Southdowns, buying or hiring rams from the celebrated flock of John Ellman, of Glynde. Aptitude to feed, with the short back and chine, were derived from a cross of Leicester blood introduced with great judgment. Having thus obtained the desired form of the animal, he endeavored to fix the same by close breeding. In this he succeeded and thus founded a flock from which has come improvement to many others.

Another mode of improvement was that adopted by Mr. George Adney. He stuck to the coarse Shropshires as he found them, making his improvements by selection, which he did with rare judgment and skill. His most fortunate production was Buckskin, a ram of rare points, who was descended from a Southdown cross; and Buckskin got Old Patentee out of a ewe bred of Mr. Adney, a superior sheep and a prize winner, whose blood still runs in every Shropshire flock of any note, not only in England but in North America. This sheep had a large, plain, and dark head.

We have stated that one of the stocks of the Shropshire was the Cannock Chase sheep, bred principally in Staffordshire. Flocks have originated also from the Whittington Heath sheep—a breed of hardy sheep very similar in type to those of Cannock Chase, and confined to a district of but 400 acres. These were grand sheep and much appreciated by the breeder. Pure flocks of the Cannock Chase Shropshire and the Whittington Heath Shropshire exist, but as a general rule the blood of all the strains mingles in the improved Shropshire Down.

The characteristics of this sheep as set forth in England are quite as well exhibited in Canada and the United States, where triplets are not exceedingly rare. The compiler of the American Shropshire Sheep Record, Mortimer Levering, Lafayette, Ind., records the fact that he had received letters stating the successful raising of four lambs from one ewe in two cases.

The Shropshire sheep of to-day exhibit much of the quality of the Southdown, with considerably more size. They have a well-developed head; the eye full and large, giving a clear and striking expression of countenance; the forehead well wooled; the ears rather large and thin, standing well out from the head; a muscular neck, well set on good shoulders; the body symmetrical and deep, placed as squarely as possible on short legs, due regard being paid to grandeur of style; a well-covered head of a uniform dark but not black tint; the skin of a nice cherry or pink color, and the legs a nice soft black, free from all white specks; the belly and legs well wooled to the knees; and all inclination for the wool to peel at the jaw and legs should be avoided.

The following is a scale of points adopted by the American Shropshire Association, in 1884, as a standard of excellence in judging Shropshire sheep:

Constitution.—Constitution and quality indicated by the form of body; deep and large in breast and through the heart; back wide, straight, and well covered with lean meat or muscle; wide and full in the thigh, deep in flank; skin thick but soft, and of a pink color; prominent brilliant eyes and healthful countenance—25 points.

Objections.—Deficiency of brisket, light around the heart, fish back, pointed shoulders, tucked-in flank, pale or too dark skin objectionable.

Size.—In fair condition when fully matured, rams should weigh not less than 225 pounds, and ewes not less than 175 pounds—10 points.

Objections.—Rams in full flesh 175 pounds or under; ewes in full flesh 150 pounds or under.

General appearance.—General appearance and character, good; carriage, head well up, elastic movements, showing great symmetry of form and uniformity of character throughout—10 points.

Objections.—Head dropping, low in neck, sluggish movement.

Body.—Well proportioned, medium bones, great scale and length; well finished hind quarters; thick back and loins; twist deep and full, standing with legs well placed outside; breast wide and extending well forward—15 points.

Objections.—Too fine bones, short body, deficient in twist, legs close together, light in brisket.

Head.—Head short and broad; wide between the ears and between the eyes; short from top of head to tip of nose; ears short, of medium size; eyes expressive; head should be well covered with wool to a point even with the eyes, without any appearance of horns; color of face dark brown—10 points.

Objections.—Horns disqualify, white face disqualifies, head with prominent bones, bare on top of head.

Neck.—Medium length, good bone and muscular development; and especially with the rams heavier toward the shoulders; well set high up, and rising from that point to the back of the head—5 points.

Legs and feet.—Broad, short, straight, well set apart, well shaped; color, dark brown, and well wooled to the knees—10 points.

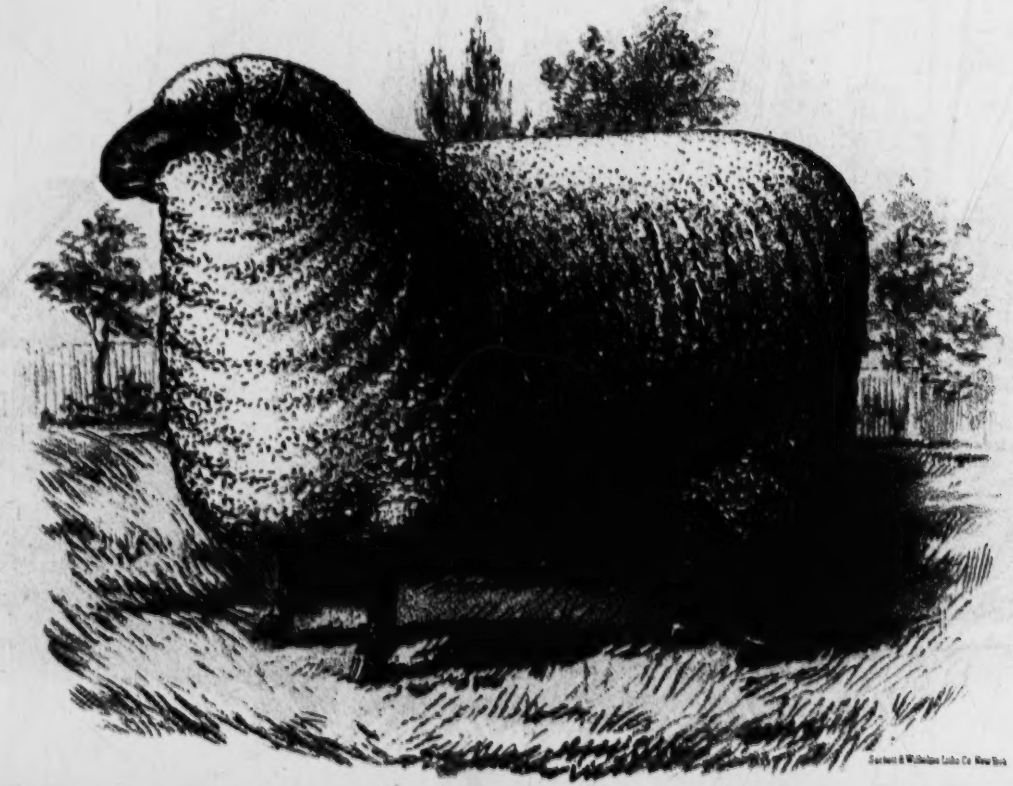
Fleece.—Body, head, belly, and legs to knees well covered with fleece of even length and quality; scrotum of rams well covered with wool—10 points.

Quality of wool.—Medium, such as is known in our markets as "medium delaine" and "half-combing wool," strong, fine, lustrous fiber, without tendency to mat or felt together, and at one year's growth not less than 3½ inches in length—5 points.

Great numbers of these sheep have been imported into the United States, and the importation continues. They are medium wooled and good shearers. An American flock of 70 head in 1888 averaged 13½ pounds of wool each. They are a good mutton sheep and bring high prices in the markets of our large cities.

A cross of the Shropshire ram on a Merino ewe, or any moderate-wooled sheep, is a good one. The product is smooth, round, evenly and easily fattened, and of good selling weight; not too heavy, as when crossed with long-wooled or very heavy-bodied sheep. The lambs of such a cross run even in size and quality, and sell with the best market sheep. A Cotswold breeder of twenty years' experience, who used a thoroughbred Shropshire ram on Cotswold ewes, found the cross a good one, improving the quality of the wool while retaining the size and weight of the Cotswold.

But the Shropshires have not the entire monopoly of the favor of the farmers. There are warm advocates of the Oxfords, the Hampshires, the Cotswolds, the Lincolns, and the Southdowns; and all of these are well represented by fine breeding flocks, and make grand show at the State fairs. By some the Oxford Down is considered the superior of the Shropshire, in that it is more hardy, and on rich, high-priced lands will pay better than any other breed. It makes a carcass of 220 pounds, and shears 9 pounds of wool. The Hampshire Downs also have their admirers. Less widely extended than either the Shropshires or the Oxfords, their merits are not so well known. They are hardy, good



AFTER CURTIS.

SHROPSHIRE RAM.

FLOCK OF SHROPSHIRE SHEEP.

feeders on the prairie farms, weigh from 160 to 230 pounds, give 8 to 12 pounds of wool, and for a mutton sheep are good shearers. For many years the Cotswolds were the favorite mutton sheep of the State. Thousands, pure-bred and grades, were introduced into the State from Canada and crossed on the Merino ewes, producing a grade which was very popular. The Cotswolds have declined, and their places have been filled by the Shropshires. A Shropshire-Cotswold cross is still adhered to by some farmers with profitable results. One who makes the raising of February lambs a specialty, and finds it more profitable than any other animal industry, states that he wintered 62 ewes of this cross breed to a Shropshire ram, that dropped 84 lambs in February. He fed them during the winter one-half an ear of corn and 1 to 1½ pounds of hay per day each, and never had sheep to do better. He cut his clover hay and sheaf oats into one-fourth-inch pieces, and fed corn, oats, bran, and hay at stated times, but generally corn and hay only. He found much profit in the manure, and had three times as much corn from blue-grass fields where sheep had been pastured as his neighbors, who had not kept sheep, got from similar land. There are a few Lincolnshires in the State, but they are not much sought after. They eat about one-third more than the Merinos and require rich pastures, but they have a compensation in final results, a good carcass and long wool. The full-blood Lincolnshires will not flock as well as the Merinos or Shropshires, but they are an excellent sheep for the farmer who follows mixed husbandry. The Lincoln-Merino cross produces good medium wool, a weighty fleece, 10 to 12 pounds, and a heavier carcass than many of the other crosses, lambs 6 months old 100 pounds and over, at 12 months 140 to 150 pounds. There are a few Leicesters, but they are not attracting much attention. Near the cities, where the choicest early lambs and the best mutton are demanded, the Southdowns are raised. The cross of the Southdown ram on a common Merino ewe produces a fine lamb and a good mutton sheep.

The raiser of mutton sheep in Indiana, as a rule, makes less complaint of depression in prices than any other person engaged in general farming or stock raising. Prices at times have been very low and discouraging. But there has not been a time when a well cared for flock would not yield wool enough to pay for its keeping, thus leaving the lambs as clear profit, with the additional profit of fattening the ewes and selling them at a fair advance on their cost. Indiana is not what is termed a wool-growing State, but it is a sheep-raising State, and with the great increase in fine English sheep, with more intelligent attention to the details of breeding and feeding, it is safe to predict that it will assume a position in the front rank.

The number of sheep, the amount of wool clipped, and the average of wool per head, are shown in the following table. The figures from 1840 to 1880 are as returned by the United States census. The number of sheep for 1890 is from the estimates of the Department of Agri-

culture. The estimate of the wool clip for 1890 and the amount of wool per head are based upon data believed to be reliable.

Year.	Number of sheep.	Wool.	Wool per head.
		Pounds.	*Pounds.*
1840	675,982	1,237,919	1.80
1850	1,122,493	2,610,287	2.32
1860	991,175	2,552,318	2.57
1870	1,612,680	5,020,023	3.11
1880	1,100,511	6,167,493	5.60
1890	1,278,000	7,206,920	5.64

Of the sheep in 1890 it is estimated that 30 per cent were Merinos and their grades; 60 per cent English breeds and their grades, and 10 per cent common coarse-wooled sheep that it would be difficult to classify. Twenty-five per cent of the wool clip was graded above medium, 45 per cent as medium, and 35 per cent below medium. Sheep were exceptionally healthy; about 36,000 out of over 1,200,000 died of disease, while over 57,000 were killed by dogs. The number of sheep in the State in January, 1892, was less by 116,300 than in 1890, but the loss in number was more than compensated for by improvement in quality and advanced prices.

ILLINOIS.

In the early settlements of the French on the Mississippi and at Kaskaskia there were no sheep. The wolf and the panther forbade their existence. The first material advance that agriculture experienced in the Illinois Territory was in 1797, when 160 honest, industrious people emigrated from Hardy County, Va., and settled near New Design, Monroe County, in southern Illinois. They took with them sheep, the wool of which they made into linseys for clothing, and they cultivated fall wheat for market. From 1800 to 1808 many settlements were made on the Ohio north to the Wabash and up the Mississippi to Kaskaskia, and the settlers brought with them the cattle and sheep common to the section of the country whence they came.

It is believed that the first flock of Merinos taken into Illinois was the small one of 6 sheep brought from England by George Flower and taken to Albion, Edwards County, in 1817, described by their owner as "6 of the finest animals of the wool-bearing species ever brought to this country." In 1842 Mr. Flower said these 6 sheep were the progenitors of his flock, which had been on the same farm up to that time. He added to this original flock 80 ewes formerly of the Steubenville flock, and the flock was frequently cited as evidence that not only did the Merino not deteriorate on a prairie farm, but that it improved, both as to the quality of the wool and mutton. Part of the increase of this flock was sold to farmers in southeastern Illinois and southern Indiana.

A Mr. Faux, an English farmer, who visited Mr. Flower in 1819, speaks of seeing 500 Merino sheep on his estate at this time, ranging

over the prairies with a shepherd. They were penned at night, yet 50 had just been destroyed by the wolves. The number is evidently an exaggeration as to Mr. Flower's flock, though it may be true as to the number of sheep of all kinds in the English settlement, of which Mr. Flower's formed a part.

A Mr. Woods, writing in 1822, speaking particularly of southern Illinois, says:

The sheep of this country, and indeed of the whole of America, as far as I have seen, are mean, when compared with those of England. They are of different sorts, but much mixed. If I can judge of their origin, I think the Lincolnshire and Welsh sheep are nearest the original breed, but many of them have had a little Merino blood mixed in with them of late years. I have seen no sign of the Southdown sheep. There are but few sheep at the prairies, and the greater part of them are very mean ones. But there are a few good Merinos and a few others tolerable, but in general they are coarse, with very hollow, coarse wool, and there are some that have a hairy kind of wool. * * * Few of the American flocks exceed 20, but most of those who keep a few shut them up at night to protect them from the wolves. * * * The Americans keep sheep for the sake of their wool, which is manufactured into various articles of clothing, and at most of their cabins you may see carding, spinning, and weaving going forward, for, to give the American women their due, many of them are truly industrious, as they manufacture most parts of their dress, and as they grow the cotton, flax, and wool, it comes reasonable. * * * These Americans hold mutton in the utmost contempt, and I have heard them say people who eat it belong to the family of wolves. * * * Wool sells, on a small scale, for half a dollar a pound, without much regard to its fineness.

Mr. J. M. Peck, in 1831, writes:

Sheep do very well in this country, especially in the older settlements, where the grass has become short, and they are less molested by wolves. But few are kept. The people of the South are more accustomed to cotton for clothing than wool. This article, when manufactured into rolls, sells for 50 cents per pound. Common wool is worth 37½ cents in the fleece. Little is said or done to improve the breed of sheep or introduce the Merino or Saxony breed.

Of a later date was the flock of a Mr. Bowers and Mr. Eno, Island Grove, Sangamon County. In 1844 these gentlemen took into the State 80 rams and 3,500 ewes. They were assisted by Mr. George Flower, who bought from the finest flocks in Ohio and Pennsylvania. Some were selected from the flock of Adam Hildenbrand, of Stark County, Ohio. Some were common, coarse sheep, selected, however, from good small flocks. The great movement of sheep to the West at that time may be judged from the remark of Mr. Flower that many flocks were moving in that direction, and that immediately preceding him was a flock of over 50,000, destined for Missouri, Iowa, and Wisconsin. Sangamon County was the center of the wool-growing industry in Illinois, and at one time clipped more wool than any one county outside of California, and more wool, taking the average, than any other county in the United States. In one family there were 30,000 Merino sheep.

A flock brought into the State about 1845 was that of Daniel Kelley, of Wheaton. This flock was formed in Vermont, and the foundation

was a purchase in 1826 of 40 ewes at the sale of John Guile's sheep, at Pawlet, Vt. Mr. Guile bought these sheep of Isaac Bishop, Granville, N. Y., and Bishop, it is said, bought them of Richard Crowningshield, by whom they were imported in 1823, regarding which Mr. Kelley says he remembers William Jarvis as saying: "Crowningshield's importation was the best ever made in the United States. He was a man of good judgment, and had been here long enough to know what was wanted for this climate, and had gone back and selected accordingly." We are of the opinion that Mr. Crowningshield made no importation in 1823, but that the sheep coming into Mr. Kelley's possession were the descendants of those shipped by Mr. Jarvis from Lisbon in 1810, and purchased by Mr. Crowningshield, for many of this blood were bought by Mr. Bishop and taken to Washington County, N. Y. Mr. Kelley's first purchase of rams was of William Jarvis, in the fall of 1826. At the same time his father and Hosea Barnes bought two rams of Mr. Jarvis, using one two years and then exchanging. In 1827 Mr. Kelley added to his flock 9 ewes, bred by Jacob N. Blakeslee. These were inferior to the first 40 bought of Mr. Guile; they were taller, shorter-wooled, and not as strong constitution.

In 1829 Mr. Kelley bought a Saxony ram of Isaac Bishop, and the next year another one. The ewes served were kept separately, and in 1833 all the Saxony blood was sold from the flock, and the breeding continued in the pure Merino line.

In 1833 he bought 4 rams of William Jarvis, with Samuel Griggs, keeping 2 of them for four years and then exchanging with Mr. Griggs. These were very superior rams, 1 of them superior to any that had crossed the Alleghany Mountains up to that time, shearing 18¼ pounds of clean washed wool, the heaviest fleece known at that date. In 1833 he bought a ewe from a Long Island flock, but not proving a good one she and her increase were discarded from the flock, which was further increased in 1836 by the purchase of 40 ewe lambs, said to have been pure Atwood blood; but at shearing time they showed an inferiority and were disposed of, most of them immediately, 4 a few years later. In 1846 he bought one ram of Stephen Atwood, and in following years other rams from the best Vermont flocks, but in all instances where the progeny was inferior it was rigidly excluded from his flock. In 1855 he purchased ewes of several parties in Vermont, which, not coming up to his standard, were disposed of, and in 1857 he purchased 83 ewes of Horace Barnes. These ewes were bred from the flocks of Mr. Kelley's father and those of Edwin Hammond, of Vermont. In 1859 he bought the remainder of his father's flock of ewes, 263 head, and in 1864 a choice ewe of German Cutting and in 1865 two more of the same flock.*

From this large and superior flock, averaging over 1,000 sheep for nearly thirty years, many Western flocks laid their foundation, and some of the blood, it is claimed by Mr. Kelley, was taken back to Rhode Island and Vermont to invigorate the old flocks of those States, and hundreds

* The American Merino Sheep Register.

of rams have been sold from it to go into Texas, Colorado and California. For many years Mr. Kelley was a large exhibitor of the Merinos at the State fairs and carried away many of the premiums. When he commenced his flock it averaged 4½ pounds of wool per head, in 1876 it sheared 11 to 12 pounds on the average, and his best fleece cleaned 8½ pounds from 20¼ pounds unwashed wool.

Improved breeds of sheep began to go into Illinois quite freely as early as 1840, the Merino attracting the most attention. Previous to that time wool-growing as a special branch of sheep husbandry received scarcely any attention, and there was but little call for thoroughbred sheep. Small flocks of 10 to 100 were kept all over the State. These were the hardy, coarse-wooled sheep of the early settlers. They were of no particular breed, though resembling the Leicesters, kept merely to supply wool for home use and not for the market. The great tide of emigration that set westward in 1840 stranded some of its strength on the Illinois prairies. The rich grasses attracted attention as a paradise for sheep. Here it was thought was its natural home, where it could fatten and thrive on rich grasses and cost next to nothing. Growing wool was the high road to fortune, and many flocks were driven into the State. Unfortunately, there was much to learn as to prairie management of flocks, and while the lesson was being dearly paid for, many sheep perished and there were heavy losses. In 1841 Mr. George Flower published a pamphlet on prairie management, in which he pointed out the difficulties and risks to which flocks were exposed in new counties, and which had prevented their rapid increase upon any large scale in the southern part of the State. The wolf was a great drawback, but the greatest loss was death from unknown causes, which had swept away whole flocks newly brought into the State, and dampened the ardor of the wool-grower. Many sheep were purchased from drovers, which had been overdriven, and which laid the foundation of disease. The dry, mild weather in autumn was often accompanied with scanty herbage, and sheep rapidly declined unobserved, the growth of wool concealing their poverty from an unpracticed eye, and a mortal stroke was inflicted before the owner suspected it. The flocks should not exceed 200 head to begin with, and must be out at dawn of day and graze until late in the evening. Where there were no cultivated grasses large fields of early-sown rye, for winter and early spring food, were recommended. Also oats, sown, perhaps, in the same field where oats grew before, by ploughing the field immediately after the crop is off, and sowing about a bushel to the acre. If no cultivated grasses were provided for sheep to feed on in autumn, it was difficult to keep up their condition in the latter part of the year. But the greatest advantage was derived from blue grass, which, if inclosed in June, would keep green all winter, and if a succession of pastures were provided the sheep would do well upon them all winter, and only need feeding when the snow was frozen on the ground. The diseases to which sheep were liable on the prairies of southern Illinois

were liver-rot and foot-rot; the former, says Mr. Flower, caused by "suffering sheep to pasture on land that is overflowed with water; even a crop of green oats, early in the fall before a frost comes, has been known to rot young sheep."

One of the earliest wool-growers of Illinois was Mr. A. B. McConnell, who, prior to 1844, had raised sheep for many years in the State of New York. When he first saw Illinois he thought that the prairies would never do for sheep, as he was imbued with the idea then prevalent that these animals needed a hilly country. But his experience taught him otherwise and proved that sheep were not liable to contract diseases on prairie soils, and the foot-rot that made such havoc East did not continue the second summer on the prairies. In the summer of 1844 his son, John McConnell, drove from New York to Sangamon County a large flock of Spanish Merinos, the first in that county and section of the State, and the foundation of the fine-wooled flocks for which the county was noted. They took three months to drive. When this and other pioneer flocks were introduced labor and land were in a very depressed condition all over the West, and a great portion of the lands were unfenced, so that free pasturage could be had in any part of the county. As flocks increased lands advanced in value, from outside causes, and large tracts were fenced or hedged in, driving the flocks onto lands of value, and adding to the cost of feeding. The flock of Mr. McConnell in 1856 was the largest in the United States, numbering over 21,000 head of what was said to be the choicest Merinos.

In 1843 Truman and Isaac Harvey began wool-growing in Lasalle County, by driving from Columbiana County, Ohio, 2,300 sheep. Of these they let and sold all but 1,200, for half the wool and half the lambs. The first year the flock averaged 3 pounds of wool per head. They procured good rams at $10 each in Ohio, which they put with the flock, said to have been full-blooded Merinos, and also a ram from S. W. Jewett, of Vermont.

In 1848 Charles T. Hoppin bought, in Madison County, N. Y., 1,000 fine Merino ewes, and drove them to Sangamon County. These ewes were bred to Ohio rams, and subsequently to Vermont ones, Mr. Hoppin having purchased a car load of straight Hammond rams and ewes, from which he subsequently bred his flock, breeding pure Atwood rams to the whole flock. Sheep from this flock were very prominent at State fairs in after years, and they laid the foundation of other noted flocks. In 1863 Charles Gilman, of Montgomery County, made a purchase of some of the Hoppin sheep, and bred a pure flock. From Mr. Gilman's flock, A. J. Uhl, of Virden, Ill., formed a flock in 1866, which was moved that year to Missouri, and in 1870 to Butler County, Kans., where it became the property of E. Copeland & Son, in 1881.

Sheep increased rapidly to 1850, and there were some large flocks. Bishop Chase had 2,000, C. Stone the same number, and others bred from 1,000 to 2,000 each. Raising sheep for wool was considered the most profitable branch of industry for the farmer. The few who had

engaged in the business extensively realized the largest profits, as high as 100 per cent being made in raising wool and lambs. Every farmer, however, had a flock principally to afford wool for home consumption; any surplus was sold in the manufacturing markets, but it was not considered a paying business in this small way. With the aid of blue grass pasture the cost of keeping was trifling, averaging not over 50 cents a head.

At this time the French Merino had been introduced and was found to do well in the southern partof the State, the Spanish Merino being preferred in the northern part. The Saxon, the Cotswold, the Leicester, and the Southdown had also been brought in, and it was observed that all these sheep grew larger than in the older States and gave more wool per head with the same care, and wool of good quality. Wool-growing in all parts of the State received increased attention and flocks of from 500 to 3,000 multiplied, the Spanish Merino being the favorite.

Some fine Merinos from Chautauqua County, N. Y., were introduced into Stephenson County in 1853, and some full-blood French Merinos were owned in 1854 by Silas Hurd, of Ogle County. Southdowns were increasing in 1854, and Richard Wray, of McHenry County, imported some Cotswold rams the same year.

In 1857 the Illinois Stock Importing Association sent a committee to England to buy improved stock, cattle more particularly. Among their purchases were some fine Cotswold and Southdown sheep, which were sold at auction in Springfield in August, 1857. Their dissemination increased the popularity of the long and middle wooled sheep among breeders, and the great war which soon followed by increasing the demand for long coarse wools assisted the sales of the Leicester and the Cotswold. Another stimulus to the business was the growing consumption of mutton.

The United States Census gives the number of sheep and pounds of wool in the State from 1840 to 1860 as follows:

Year.	Sheep.	Pounds of wool.
1840	395,675	650,067
1850	894,043	2,150,113
1860	769,135	1,989,567

In the last-named year, at shearing time, wool was a drug at 23 to 25 cents, the sheep market was low, and prices had ruled so low for some years before that sheep were thought to be rather poor property, and the number decreased to 731,379 in 1861. But in 1862–'63, when wool went up to $1, even old men of experience paid $200, $300, and $1,000 for one ram to build up a flock, as though the price of wool never would come down and sell in three years for 25 cents, and hard to find a market at that price. Sheep increased to 913,024 in 1862, and to over 1,200,000 in 1863. The condition of sheep-husbandry at this

time, and the needs of a home market for the wool, is expressed in a report of the Illinois Board of Agriculture for 1864:

If there be any one branch of husbandry in which the State of Illinois should, and as we believe will, become especially prominent, it is the production of sheep and wool. We found this statement not simply on the facts that wool-growing here has been very profitable, that the soil and climate are peculiarly favorable, that the number of sheep and the number of flockmasters have multiplied with great rapidity within a few years; but we add to these another consideration which is clearly seen and beginning to be felt with great force—woolen manufactures must be largely increased. The necessity exists and the facilities abound. If the wool-growing interest has flourished in the past, when the product was transported 1,000 miles and disposed of at prices in fixing which the wool-grower had very little to say, what may we not reasonably expect when it shall have become the basis for a profitable manufacture at our own door? Already capitalists, and even the farmers themselves by associated effort, are moving in this direction. The early future will witness changes of great magnitude and significance. In our judgment there is no more or greater necessity for our continued dependence upon Europe or New England or any region beyond the borders of this State for woolen fabrics, except possibly those of the very finest texture and material, than upon Pennsylvania for coal, or Lake Champlain for ice; and when the country shall reënter upon the paths of peaceful progress, capital, industry, and enterprise be left free to select their own fields of operation and development, we may look with great confidence to the establishment of woolen manufacture upon a broad and permanent foundation, to assume in time proportions commensurate in some good degree with the facilities available and the market to be supplied. It is easy to conceive the action and reaction between sheep husbandry and the manufacture of woolen fabrics when brought so closely together as they must then be, under conditions so favorable to both. While there has been for the past four years a considerable increase in the number of sheep owned in the State, the improvement in quality is even more marked. The great mass of those imported from other States are high-grade Merinos, and such has been the good judgment and enterprise of breeders, very few of the old native stock now remain in their flocks. The fleeces which find their way to Eastern manufacturers are chiefly of the quality known as "delaine wools." There are some choice flocks of mutton sheep, Cotswolds, Leicesters, and Southdowns, held in high favor by many farmers, and popular with the consumers of this healthful meat. That they have not become more numerous may, perhaps, be accounted for by the fact that they are not so easily grazed in large flocks on the prairies as the Merino and their grades.

There were many pure Spanish Merino flocks founded from 1857 to 1870 for breeding purposes, but few of them found their way into the books of registry. In the spring of 1857 N. S. Colby, of McHenry, Ill., founded a flock by the purchase of 20 ewes from John Estebrooks, Vermont, and an Atwood ram bred by George Dike, of Illinois. In the fall of 1859 he purchased 10 ewes bred by Edwin Hammond, of Vermont, and a ram also bred by Mr. Hammond. In 1863 he purchased 1 ewe of Smith Brothers, Dekalb, Ill., and made subsequent additions of Vermont and Illinois rams and ewes bred from the best flocks.

James F. Parker, of Woodstock, established a flock in 1860 by the purchase of a ram and 20 ewes of N. S. Colby, and added to the purchase 20 ewes from the same flock in 1863 and 20 more in 1870. In 1867 he purchased of Orin Ellsworth 90 ewes of Atwood and Hammond blood. He used several of the best Atwood rams in his flock.

John R. Baker, of Geneva, founded a flock about 1860 by the purchase of

30 select ewes from the flock of Charles Crampton, Du Page County, Ill. This flock was originally purchased for Mr. Crampton by Daniel Kelley.

In 1864 F. E. Day, of Washburn, began the formation of a flock by a purchase, in company with C. W. Mason, of 5 pure-bred Atwood ewes from the flock of Mr. E. Bridge, Woodstock, Vt., and of 24 Atwood ewes from Edwin House. At the same time 24 Atwood ewes were purchased from Henry House. Later in the same year Mr. Day purchased of Henry Thorp 10 yearling ewes, all Atwood blood, and 2 ewes of B. J. Brown, St. Albans, Vt., also Atwood blood. These were bred to some of the best Atwood rams of Vermont. The flock was formed in Vermont and taken to Illinois in the fall of 1868.

George W. Hunt, of Greenwood, formed a flock in June, 1865, by the purchase of 12 ewes and a ram from N. S. Colby, Hammond and Atwood blood. In 1867 he purchased of Orin Ellsworth, New York, 83 ewes, Hammond, Stickney, and Robinson blood. In 1874 he purchased Kelley's ram, Captain Jack, and in 1877, 1878, and 1879 purchased of E. N. Bissell, Vermont, 26 ewes and 3 rams of the Rich blood.

In 1866 Messrs E. Peck & Sons, of Geneva, started a flock by the purchase of 75 ewes of John R. Baker, of the same place, and of the ram Addison Chief of E. N. Bissell, Vermont. In 1869 they purchased 50 select ewes from the flock of J. S. and J. P. Town, of Batavia, Ill. The Town flock originated by a purchase of 10 ewes from Jonathan Dyke, of Crystal Lake, Ill., in 1847. Mr. Dyke bought 40 head from the pick of several of the best Vermont breeders, and they were the first pure Spanish Merino sheep introduced into Kane County. Six years after this purchase, in 1875, Peck & Sons purchased the entire flock of William Balis, of St. Charles, Ill., which consisted of 95 ewes. These were Atwood, Blakeslee, and Rhode Island sheep. In the same year they purchased 49 ewes of E. N. Bissell, of Vermont. Rams were purchased of E. N. Bissell, Daniel Kelley, T. Stickney & Son, and J. T. and V. Rich. This became a very superior flock, and the annual shearings, as noted in subsequent pages, attest the great care with which it has been bred and its great improvement. In 1890 it numbered over 1,900 head pure-bred Merino sheep.

The year 1865 marked an era of sheep shearing for heavy fleeces throughout the United States, to which Illinois contributed its quota. Of the public shearing at Catlin, Vermilion County, May 20, 1865, the record is as here given:

Age.	Carcass.	Fleece.
	Pounds.	*Lbs.* *Oz.*
One-year-old ram	71	12 13
Two-year-old ram	79	14 15
Three-year-old ram	141½	16 2
Do	119	19 15
Two-year-old ram	94½	17 5
Five-year-old ram	149½	17 13
One-year-old ewe	48½	10 9
Do	40	9 6
Do	59½	10 2
Do	82½	10 7

At the Stark County fair, May 30, 1866, 34 sheep were sheared. Seven yearling rams gave from 8 pounds to 18⅜ pounds unwashed wool. Seventeen rams 2 years and over gave from 8 pounds to 17½ pounds. Six yearling ewes gave from 5⅝ pounds to 8½ pounds, and 4 ewes 2 years old and over gave from 7½ pounds to 8 13/16 pounds. At the Marion County fair, the same year, the first premium Merino ram weighed 158 pounds and gave a fleece of 18¼ pounds, the second premium ram weighed 121 pounds and gave a fleece weighing 16½ pounds.

The report on scoured fleeces at the Illinois State fair of 1866 is very full, and presents some features of permanent interest:

Owner.	Breed.	Sex.	Age.	Carcass.	Fleece.	Scoured wool.	Age of fleece.
			Years.	*Pounds.*	*Lbs. Oz.*	*Lbs. Oz.*	*Mo. Dys.*
A. M. Garland	Spanish Merino	Ram	3	164	13 6	5 4	11 15
L. H. Wright	do	Ram	5	116	13 10	4 5	11 14
Brown & Reynolds	do	Ram	4	127½	18 13	6 14	12 23
Jacob Leonard	do	Ram	2	140	21 2	6 13	11 24
Nelson Jones	do	Ram	2	100	16 3	4 7	13 2
Royce & Crooks	do	Ram	2	139	18 8	5 13	11 12
Do	do	Ram	3	103	16 0	4 9	12 10
John Turnbull	do	Ram	3	115	13 2	5 5	11 19
G. W. Taylor	do	Ram	*15	108	17 14	6 2	15 0
Do	do	Ram	*15	131	17 2	6 2	15 0
Do	do	Ewe	2	102	10 2	4 6	.....
Do	do	Ewe	1	81	12 10	4 13	12 0
Do	do	Ewe	*15	42½	8 11	3 1	15 0
Jacob Leonard	do	Ewe	1	68	11 14	5 0	.....
Geo. L. Burris	French Merino	Ewe	*13	77½	8 6	4 1	13 0
L. H. Wright	Spanish Merino and Cotswold.	Ewe	3	130	12 2	5 3	11 14
Geo. W. Minor	Cotswold	Ewe	2	.....	7 6	4 0	.....
J. H. Pickrell	Southdown	Ewe	2	.....	7 13	4 2	.....
Do	do	Ram	2	.....	7 7	4 3	.....

*Months.

In 1867 the Northern Illinois Wool-Growers' Association held a shearing and scouring match, and about 20 sheep competed. The result on the four heaviest of each sex is here given:

Sex.	Carcass.	Fleece.	Scoured wool.	Age of fleece.
	Pounds.	*Lbs. Oz.*	*Lbs. Oz.*	*Days.*
Ram	96	19 7	6 11	365
Do	100	22 13	5 14	383
Do	116	14 4	7 12	361
Do	103	22 12	6 8	368
Ewe	61	10 9	4 5	445
Do	62	11 13	4 14	420
Do	63	12 13	4 7	379
Do	66	11 5	4 10	383

The wool clip of Illinois in 1865 was the largest ever produced in the State, amounting to nearly 12,000,000 pounds from a little less than 3,000,000 sheep, or something over one to each of her inhabitants. By far the greater portion of this amount, more than three-fourths, was clothing or card wool, the product of the Merino sheep and its crosses. Wool-growing had advanced with rapid strides, until the prairies which once counted the sheep by thousands now counted the flocks by thousands. There was also a healthy increase in manufactories during the years 1863 and 1864. But there was a great change. The war closed, foreign goods flooded the market, the United States Government added its accumu-

lation of army cloths, flannels, and blankets, and wool fell in price. The result was that Merino sheep, which in 1862–'63 were bought at such fabulous prices, were almost worthless, and thousands were pelted and rendered to tallow, at a cost to the purchaser of $1.00 to $1.25 each. The census of 1870 showed about half as many sheep as in 1865. From 3,000,000 they had fallen to 1,568,286, and from $2.23 a head to less than $1.00.

Mr. A. M. Garland, in an address before the State Agricultural Society in January, 1871, finds other causes for this great decline, additional to those above given. The increased demand for and consequent high price of wool during the war stimulated the increase of flocks by any and every means, of which advantage was taken by the shrewder eastern neighbors, who supplied all aspiring flock masters with diseased and otherwise worthless animals, culled from the flocks of Ohio, Pennsylvania, and other States. Animals that none but the most profound naturalist would suspect of belonging to the sheep genus found ready purchasers at round prices. Pampered rams, not worth more than the wool upon their backs, were bought at fabulous prices, and allowed to become the sires of lambs that developed in a high degree the worthlessness of both their sire and dam. But one fate could be in store for such animals, even under the most judicious management; and if, in the hands of unskilled shepherds, they disappeared from pastures and prairies with a celerity equaled only by the suddenness of their advent, there was not much cause for regret, the lesson to the husbandman being worth more than the stock. But a serious evil followed in the wake of this worthless stock. There were in the State large numbers of valuable sheep, that were yearly paying their owners a handsome profit. These, with exceptions few and rare, became diseased by contact with infected animals, and to a very damaging extent were rendered unprofitable in consequence of the increased expense necessary in handling them. The great difficulty and expense necessary in eradicating infectious diseases from large flocks compelled their owners to turn them over to the knife and the shambles. The loss in this direction was serious in the extreme. Another element tending to the discouragement of wool-growing was the dog, daily consuming what would confortably feed and clothe 5,000 families of 5 persons each.

James T. Dwyer, of Sangamon County, asserts that the Illinois State Agricultural Society unintentionally contributed to depress the value of Merino flocks by inaugurating a system of fleece washings, which showed that selected fleeces gave but from 3 to 6 pounds of clean wool, and that the average shrinkage on all the banner fleeces sent in to be tested in the washtub was nearly two-thirds, or 66⅔ per cent—1 fleece that weighed, unwashed, 24 5/16 pounds, losing 78½ per cent. And Mr. Dwyer added that the Spanish Merino had been to the county and State an agricultural calamity, it having completely supplanted the mutton and long-wooled improved varieties, which, if in such numbers

as the Merinos reached, would give an annual and increasing income of millions of dollars to the State.

There arose from the disaster to the fine-wool industry a compensation in greater attention to the mutton sheep. The introduction of long-wooled fabrics in all classes of woolen garments created a demand for these wools, and there were some shrewd farmers in Illinois who saw far enough ahead to form a conclusion that the animal which could meet this demand and at the same time furnish mutton was to be the coming sheep for the farmer. Consequently, these sheep increased rapidly when the Merino was on its decline, and bade fair to supplant it and to assume that prominence to which it was justly entitled in the farming industry of a State famed for its fine grasses. Few farmers were found in the State who could afford to do without sheep, and but a few who had not grasses to feed them. In handling them no more care was required than that which was due to all other stock. The return in wool and lambs was comparatively steady and fairly remunerative. In 1856 the number of fat sheep marketed in the State was 157,286, with a total gross weight of 14,155,740 pounds, valued at $495,450. In 1865, the number marketed was 433,194, weighing 38,987,400 pounds, valued at $3,202,788.

The census of 1870 gave Illinois 1,568,286 sheep, yielding 5,739,249 pounds of wool, an average of 3.66 pounds per head. The tariff of 1867 gave some protection to wool and caused a slight increase in fine wool-growing. The common flocks of the State and some of the lower grade Merinos were crossed with Vermont and New York rams, wool advanced in price, and the Merino was again in favor. In 1872 J. R. Morrison, of Bates, sheared a small flock of 10 sheep of 131¼ pounds of wool, an average of 13 3/16 pounds a head. The lightest fleece was 8 pounds and the heaviest 24½ pounds.

A celebrated flock of 1872 was that known as the Ballinger flock. Fifty-nine head of this flock (7 rams, 33 old ewes, and 19 yearlings) sheared 707 7/16 pounds, just 9 ounces short of making an average of 12 pounds each. At the head of this flock was the ram "Prince Ballinger," whose fleeces at 3, 4, and 5 years old weighed 71¾ pounds, one of them 25 1/16 pounds. The weight of 14 ewe fleeces is given:

	Lbs.	Oz.
Four years of age	13	11
Five years of age	16	8
Three years of age	14	5½
Six years of age	12	9½
Four years of age	16	15½
Do	15	3½
Seven years of age	11	6
Four years of age	11	9
One year of age	12	9
Do	11	11
Do	8	8½
Six years of age	16	1½
Five years of age	14	9½
Seven years of age	13	11

At a Sangamon County shearing in 1875 eighty-seven Spanish Merinos, mostly pure bred, sheared 841 pounds of wool, unwashed, an average of 9.67 pounds. Ten or twelve were rams, yielding 17 to 19 pounds.

Notwithstanding the protection held out by the tariff of 1867, wool-growing and sheep husbandry did not increase from 1870 to 1880; in fact, there was a decline of 33 per cent in the number of sheep, being but 1,037,073 in 1880, as against 1,568,286 in 1870. But notwithstanding the great falling off in the number of sheep, the wool clip increased from 5,739,249 pounds in 1870 to 6,093,066 pounds in 1880. The continued improvement in the Merino and the heavier fleeces of the long-wooled mutton sheep had increased the yield per head to 5.87 pounds, an increase in ten years of 2.21 pounds.

Of the sheep in 1880 about one-fourth were Merinos and their grades, one-half the common sheep so called, one-eighth improved mutton sheep and their grades, and an eighth which it would be difficult to class, being about equally mixed from the forenamed. Within the ten years preceding the English mutton breeds had increased and the others declined. Of the Merinos one-fourth were full-blood, one-fourth three-quarter blood, one-fourth half-blood, and one-fourth less than half-blood. Of the mutton breeds there were the Lincolnshires, the Cotswolds, the Southdowns, the Shropshires, and the Leicesters. The weights of the different breeds are given:

Breed.	At 6 months.	At 12 months.	Fully grown.
	Pounds.	*Pounds.*	*Pounds.*
Merinos	30	80	90
Long-wools	75	110	150
Middle-wools	60	100	125

The unwashed fleeces of the Merinos averaged 5 pounds, of the long wools 7 pounds, and of the middle wools 8 pounds.

There had been from 1875 to 1880 an increasing interest in sheep of the best kind. Every one seemed to want them, and old farmers who never owned a sheep sold their cattle in 1881 and 1882 to purchase them. Never in the history of the State was there such a demand for sheep of all kinds as in 1882. Some Merinos were purchased for new flocks, but the general tendency was for the various breeds of mutton sheep. From 1880 to 1883 there was a perfect mania in central Illinois for long-wool rams, which, however, subsided in 1884, when they were utterly neglected.

The number of sheep constantly declined, and the returns for 1884 showed less than that of any year since 1862, with the exceptions of the years 1875, 1876, 1877, 1878, and 1879. The decline was due to the low prices of wool and mutton. Mutton was lower in 1883 and 1884 than at any time since 1854, with the exceptions of 1858 and 1879. Wool was down to a very low figure, lower than it had been for some years. The amount of wool produced in the State in 1884 was 4,584,935

pounds, exceeding the product of each of the two years preceding, but realizing much less money. The value per pound had steadily declined from 35 cents in 1879 to 21 cents in 1884. The number of pounds of wool shorn, its value per pound, and its total value from 1877 to 1884 are given in the following table, compiled from the assessors' returns and the statistical reports made to the Illinois department of agriculture:

Year.	Number of pounds shorn.	Value per pound.	Total value.
1877	3,291,677	$0.30	$987,503
1878	2,891,087	.25	722,752
1879	3,944,558	.35	1,380,595
1881	4,757,938	.34	1,617,698
1882	4,636,711	.29	1,344,646
1883	4,570,081	.27	1,233,922
1884	4,447,808	.26	1,099,822
	4,534,935	.21	912,418

The decline in sheep continued, falling from 1,037,073 in 1880 to 925,201 in 1887. The continued low prices of wool and mutton and the destruction by dogs were the causes. Many farmers reduced their flocks while others sold out entirely. There was also a change going on in the character of the sheep, an increasing substitution of the mutton sheep for the Merino—a tendency that was recognized in the prediction of one of the leading agriculturists of the State, that sheep for wool-growing alone in Illinois would be abandoned for sheep that would produce mutton and wool. Mr. A. M. Garland, a veteran Merino breeder, says that the Merino must be brought to a standard both in size and quality of flesh, at which it will be recognized as a good mutton sheep. He insists that it can be increased 30 to 50 per cent in size, while otherwise adding to its popularity for mutton production. No outside blood is deemed necessary, and none should be tolerated in bringing about this improvement in size; all necessary elements are now in the hands of the breeders. Speaking on the same line, another Illinois breeder says:

> We need not go outside of the Merino to obtain an all-purpose sheep. Two or three crosses with a large, plain Merino ram, with good, generous keeping, will give us a mutton sheep that we need not be ashamed to put alongside of any in the market, and one that I believe will produce a pound of wool and meat cheaper than can be done on any other sheep. This is also the kind of sheep most in demand for stock purposes on the great ranches of the West, which is to be the great outlet for our surplus stock; therefore, I believe it will be better for the most of us to pay less attention to fancy points and more to what constitutes real value. As a factor in our system of agriculture, the sheep occupies so important a position as to be the turning point in the scale between loss and profit.

That the Merino is capable of an increase of 30 to 50 per cent is shown in shearings of the last few years in Illinois, whose many rams have given 140 to 180 pounds live weight, some from 180 to 202 pounds, and ewes from 100 to 120 pounds. Some Merino breeders, looking to an increased size of sheep, have substituted for the Vermont Merino,

the plainer, larger sheep of eastern Ohio and western Pennsylvania—the Delaine type. Crosses of the long and middle wool rams or Merino ewes are growing in favor, for which the many fine English breeds of sheep now established in the State give great advantages. Before considering these breeds and their crosses we will note some additional data of the Merino.

At the shearing of the Northern Illinois Merino Sheep-Breeders' Association in 1881 15 rams and 8 ewes were shorn of 470 pounds of wool, an average of $20\frac{15}{23}$ pounds each. One ram gave $30\frac{1}{2}$ pounds; one 29; one, $27\frac{1}{2}$; two, $25\frac{1}{2}$; one, 24; and three, $23\frac{1}{2}$. A seven-year-old ewe gave 19 pounds; one gave $18\frac{3}{4}$, and two $15\frac{1}{2}$ each.

At a shearing of the same association in 1884 13 rams and 14 ewes gave $445\frac{1}{8}$ pounds of wool, an average of $16\frac{13}{27}$ pounds each. The heaviest ram fleece weighed $30\frac{5}{8}$ pounds. Two weighed $27\frac{1}{2}$ pounds each, two $22\frac{3}{4}$ pounds each, and two 22 pounds each. The heaviest ewe fleece weighed $17\frac{3}{4}$ pounds, the next 16 pounds, and two weighed $15\frac{1}{4}$ pounds.

At the shearing of the same association in 1885 12 rams and 10 ewes gave 367 pounds of wool, an average of $16\frac{15}{23}$ pounds each. The heaviest ram fleece was $30\frac{1}{2}$ pounds; two ewes gave 19 pounds each. The live weight and yield of wool for the five heaviest in each sex is here given:

	Weight of carcass.	Weight of fleece.
	Pounds.	*Pounds.*
Five-year-old ram	123	$30\frac{1}{2}$
Do	115	$22\frac{1}{2}$
Two-year-old ram	$111\frac{1}{2}$	$22\frac{1}{2}$
Do	127	$21\frac{1}{2}$
Do	80	$21\frac{1}{2}$
Two-year-old ewe	87	19
Do	65	19
Do	102	$15\frac{1}{2}$
Do	94	$15\frac{1}{2}$
Do	66	15

In 1887 E. E. Gilbert, of Wauconda, sheared from 6 two-year-old rams $149\frac{1}{4}$ pounds of wool, an average of $24\frac{5}{6}$ pounds each. The weight of each fleece and the days' growth follow:

Weight of fleece.	Days' growth.
Pounds.	
$21\frac{1}{2}$	363
$26\frac{1}{2}$	365
$24\frac{3}{4}$	364
$30\frac{1}{4}$	355
$22\frac{1}{2}$	353
$24\frac{1}{2}$	359

In 1889 Messrs. E. Peck & Sons, from their Merino flock of nearly 2,000 sheep, sheared rams and ewes which gave the following fleeces, all the growth of 365 days:

	Live weight.	Weight of fleece.		Live weight.	Weight of fleece.
	Pounds.	*Pounds.*		*Pounds.*	*Pounds.*
Three-year-old ram	125	40½	Four-year-old ewe	83	21½
Four-year old ram	130	39	Six-year-old ewe	110	20½
Three-year-old ram	142	32	Two-year-old ewe	63	19½
Four-year-old ram	136	31½	Six year-old ewe	100	18½
Five-year-old ram	124	28	Three-year-old ewe	83	18
Two-year-old ram	90	28	Do	102	18
Three-year-old ram	127	26			

Many rams sheared from 26 pounds down to 15 pounds, and ewes from 18 pounds down to 12 pounds.

At the shearing of the same flock in 1890, 15 rams and 6 ewes made this record:

	Live weight.	Weight of fleece.		Live weight.	Weight of fleece.
	Pounds.	*Pounds.*		*Pounds.*	*Pounds.*
Four-year-old ram	155	39½	Two-year-old ram	113	23½
Do	118	35	Three-year-old ram	135	21½
Do	147	33	Yearling ram	84	15½
Five-year-old ram	157	32½	Do	84	15½
Three-year-old ram	110	31	Five-year-old ewe	84	20½
Two-year-old ram	119	28½	Three-year-old ewe	83	20½
Three-year-old ram	110	27½	Six-year-old ewe	83	17
Six-year-old ram	108	26½	Two-year-old ewe	67	16
Three-year-old ram	107	26	Do	75	15½
Two-year-old ram	111	25½	Seven-year-old ewe	99	20
Do	107	24			

At the shearing of the same flock April 10, 1891, 18 rams, two years old and over, weighed 2,529 pounds and gave 493 pounds of wool, an average weight of the rams of 140 pounds each and of the fleece of 27 $\frac{7}{18}$ pounds each. Four yearling rams gave an average of 16¾ pounds of wool each, one rising to 26 pounds. Thirteen ewes gave 224 pounds of wool, an average of 17 $\frac{3}{13}$ pounds each. The individual record of the 12 heaviest shearing old rams, four yearlings and 6 ewes, is here given:

	Live weight.	Weight of fleece.		Live weight.	Weight of fleece.
	Pounds.	*Pounds.*		*Pounds.*	*Pounds.*
Ram two years old and over	202	40½	Ram two years old and over	132	25½
Do	145	34	Yearling rams	112	15½
Do	170	32	Do	75	11
Do	159	28	Do	102	14½
Do	146	28	Do	114	26
Do	138	28	Ewes two years old and over	108	23½
Do	166	32	Do	106	21
Do	171	32½	Do	103	22
Do	144	28	Do	108	20
Do	143	25½	Do	93	17
Do	160	25	Do	84	16

In 1880 over one-fourth of the sheep were Merinos and their grades; in 1890 the Merinos did not number one-eighth of the total. Their place was taken by the English mutton breeds, principally by the Shropshires. There are now but a few pure-bred Merino flocks in the State, and these almost wholly in the northern part. Where ten flocks existed twenty years ago but one prospers now. The low price of wool and the greater profit in dairying were the primal causes of the decline, to which more recently has been added the greater demand for a mutton sheep. All these have been fatal to the Merino wool industry. The fine-wooled sheep have been banished from the best farming lands of the State, and, with the exception of some breeding flocks maintained to furnish rams for the far West and in the hope of better days nearer home, and an occasional flock still maintained for wool-growing because the owner knows how to make it pay, they have given place to mutton breeds. Even where the Merino still maintains a precarious foothold there is a disposition for a change from the Vermont type to that so successfully developed in western Pennsylvania and eastern Ohio, a sheep that will weigh 160 to 210 pounds good for mutton, and give a 14-pound fleece, where the carcass and the fleece furnish mutual protection, one paying the expense of the other. The rich pastures of Illinois can raise such a mutton Merino and the probabilities point to success in that direction.

There are some who look to the French Merino as the sheep to bring about this consummation of the best wool on a mutton carcass, and they point to the success attained in France in that direction. When the French Merinos were first introduced into the country many were sold to wool-growers of northern Illinois, but were not cared for as they should have been, and, in consequence, fell below their anticipated value. They were very generally discarded and but little if any of the blood remains in that section. There is, however, a flock in the southern part of the State which promises well. It is owned by a farmer who has had experience in raising these sheep in Utah, and who reports that while not yielding as much wool per head as the French Merino in Utah, they are very healthy, the climate agrees with them, and the future looks bright.

Illinois is liberally provided with breeding flocks of the leading English mutton sheep, the Southdowns, the Shropshires, the Hampshires, the Oxfords, the Cotswolds, the Leicesters, the Lincolnshires, and the Cheviots. At the eighth annual fat stock show at Chicago in 1885, all but the Cheviots were represented. Of the 148 animals on show the middle-wool varieties were in the majority, numbering in all 49, and consisting of 18 Southdowns, 11 Shropshires, 12 Hampshires, and 8 Oxfords. The 33 long-wools were made up of 12 Cotswolds, 13 Leicesters, 8 Lincolns. A yearling Shropshire was adjudged the best wether in the show. A Canadian-bred Leicester, weighing 346 pounds, took

the prize for the heaviest sheep. A pure-bred Oxford from Michigan took second, with 308 pounds.

The first mutton sheep introduced into Illinois was probably a grade Leicester, by which is meant a sheep originally of Leicester blood but deteriorated by admixture with the so-called common sheep of the country. Such sheep are yet to be seen in some parts of southern Illinois, continuing on without improvement and apparently without deterioration. But in numbers they are decreasing.

The Southdowns are the standard mutton sheep by which all other mutton breeds are weighed, and they have always been held in high esteem. They are to be found in all the counties of northern and central Illinois and in some portions of southern Illinois. In central Illinois, particularly, where, in former years, the Merinos were supreme, the farmers who depend upon the profits of mutton as well as wool find these sheep profitable, and their lands and pasturage well adapted for their maintenance. The growing demand for choice mutton in the cities leads many farmers to use Southdown rams on their flocks, and the demand for juicy Southdown lambs is rapidly increasing. One of the earliest Southdown flocks of Illinois was formed in 1844, and began with one ram and two ewes imported from England. They were landed at New York and shipped thence by way of the lakes and canal to La Fayette, Ind., and from there hauled to Sangamon County, Ill., in a light 2-mule wagon, by George Pickrell, son of Jesse A. Pickrell, to whom they belonged. Mr. Pickrell used no other than pure Southdown rams on his flock from that time until 1873, when the flock came into possession of his son before mentioned, who has kept it pure, using only the best rams to be obtained.

Another valuable importation of Southdowns into the State was that made by the Illinois Importing Company in 1857. This importation consisted of 4 yearling rams, 1 ram lamb, and 8 yearling ewes, all from the flocks of Jonas Webb. The 5 rams sold for $350 and the 8 ewes for $560. A part of these were bought by J. N. Brown, and their descendents are still found in some of the best Illinois flocks and in those of other States.

There were other importations, not direct from England but from the eastern States, and the Southdown was being gradually extended when the war of the rebellion commenced. An Illinois writer, speaking of that period and of his State, says:

> The importation of wool was at an end for the time, and the American farmer again went to wool-growing with greater earnestness than ever before. The reduction of the cotton crop in the South made the growing of wool all the more profitable. The effects of the war on the further improvement and dissemination of mutton sheep, however, were the reverse. The importation of breeding stock was necessarily discontinued. The flocks already begun were more or less broken up. * * * A public record of breeding stock had not yet been established, and pedigrees were not then as carefully kept as they have since been. After the war was over the best of the scattered flocks soon began to show up again. The strong infu-

sion of Southdown blood was not to be lost in a few years of time. The attention of farmers who were without the unlimited range for grazing required by the more exclusive wool-growing sheep, was again directed to the improvement of their flocks in the production of mutton. The Southdown has shown itself well adapted to our soil and climate. It was known to mature early, to be prolific, to be of a quiet disposition, and excel all other breeds in the quality of its mutton. It was believed also to produce a larger proportionate amount of good meat, the fat being less, and the joints smaller than any other sheep. As a mutton sheep it had always found a ready market.*

Favored by location, the flock of John Wentworth, of Chicago, was comparatively exempt from the influences that tended to scatter others during the war. In 1861 he received from England two noted rams bred by the Prince of Wales, which he used to good advantage in improving his flock at Summit Farm. In 1872 he bought of Col. L. G. Morris, of New York, the imported ram Audley End, bred by Lord Braybrooke, England, and whose sire and dam were from the Jonas Webb flock.

The great number taken into the State within recent years forbids mention or enumeration. They have gone into nearly every section, and the State has as good breeding flocks as can be found in any other State of the Union.

The Shropshires are of comparatively recent introduction into the State, and have made their greatest development since 1883. The climate and herbage agree with them, and they are spreading with wonderful rapidity. They are believed by many to be the coming wool and mutton sheep of the State—the all-purpose sheep. Their carcasses are larger than those of the Southdowns and their mutton but a shade inferior, while their fleeces are heavier. On an average the Illinois Shropshires give fleeces averaging 7 pounds, while those of the Southdowns weigh 6 pounds. They are hardy and good mothers. They made a great stride in 1890, when the cross of a Shropshire ram on a Merino ewe carried off the premium at the Chicago fat stock show for the highest quality of mutton. This cross is very popular and is now generally adopted. A cross of the Shropshire on the Cotswold has shown some advantages.

The experience of a Winnebago County farmer with the Shropshire cross in 1888 presents something practical. He bought 93 ewes at $2.17 per head and a Shropshire ram for $25. Fifty of the ewes were grade Merinos. From these he had 45 lambs, dropped in May, lost 5 and sold 40 in September for $3 per head. Their average weight was 80 pounds. The remaining 43 ewes were grade sheep, and from them he raised 44 lambs and lost none. They were dropped in March, and 34 were sold in July and August at $3 each. Their average weight was 85 pounds and they were not fat on account of drought. The sheep clipped 7½ pounds of wool to the head, which sold for 20 cents per pound.

* American Southdown Record, Vol. III.

Investment.

93 ewes, at $2.17	$199.81
One ram	25.00
Cost of feed in winter	141.00
Cost on May 1	365.81

Receipts.

Wool sold in June	$136.30
34 lambs sold July and August, at $3	102.00
40 lambs sold in September, at $3	120.00
42 fat ewes in October, at $4.14	173.88
50 Merino ewes in November, at $2.75	137.50
Total receipts	669.68

From the progeny of the sheep purchased he had 10 of the best ewe lambs on hand, which weighed 123 pounds at an average when 7 months old. He estimated them to be worth $50 and the ram $25. This would make:

Ram and lambs on hand	$75.00
From sales	669.68
Total	744.68
Investment	365.81
Balance	378.87

He thus had $378.87 for the use of 50 acres of pasture, and he considered that the droppings on the land fully repaid the pasturage. He considered it folly to breed for wool alone. The Merino was not desirable for the table, but two crosses of Shropshire or Southdowns would make good mutton sheep and a good, fair fleece of medium wool.

The Hampshire Downs have not made a great show in the State. There are one or two small breeding flocks, and there are some who admire them, but they are not well enough known to be generally appreciated.

The Oxford Downs are better known than the Hampshires, and have some staunch friends who consider them superior to the Shropshires or the Southdowns. Not superior to the latter in quality of mutton, but superior where quality and quantity are both considered. There are a few pure-bred flocks in the State, and the increase in numbers is conservative. The Oxford cross on the Merino has been known to produce a 2-year old ram weighing 200 pounds, and a flock of 100 at that age in Illinois have averaged 180 pounds and produced 7½ pounds of wool per head, or nearly 2 pounds more than the general average of the Southdowns in the State. The Oxfords are considered extremely valuable to grade up the common sheep of the country.

The Cotswolds were long a favorite mutton sheep in Illinois, and the cross of the Cotswold on the Merino was at one time the almost universal practice. Great numbers were brought in from Canada and a

few from the Eastern States. They have not maintained their relative position since the advent of the Shropshires, but there are some pure-bred flocks in the State and some enthusiastic breeders. From one of these flocks in 1889 there was sheared from 20 yearlings an average of 20 pounds of wool, from 40 old suckling ewes an average of 14 pounds each, and from 2 two-year-old rams 44 pounds. One imported yearling cut 33 pounds of good clean wool that sold at 22¾ cents a pound. Recent importations have been made from the best flocks of England.

The Lincolnshires have been at home in Illinois for many years, but have not made much headway. Their long wool was at one time in much demand and bade fair to give them a great increase, but fashion changed and interest in them abated. They maintain an humble position, even more so than warranted by their deserts and real worth.

A small flock of Blackfaced sheep was taken into the State in 1874 and bred for some time with success, proving themselves well adapted to the locality where they were placed, though they would be much more suitable for the mountains of Tennessee and North Carolina and those of Colorado.

The Cheviots were first taken into the State in 1888, when Mr. E. Pumphrey imported 10 ewes and 1 ram from the flock of E. J. Bruce, Pittsfield, N. Y. The next year they lambed 150 per cent and have since done well. The Horned Dorsets have been attracting some attention of late, and a few of them have been imported from England.

The great increase in the mutton trade of Chicago, and of all the eastern cities having communication with that place, is largely due to the improved quality of the meat, and Illinois has been prominent in that improvement. Her improved breeds, handled with care and fed on her rich grasses, have been factors in that improvement and one of the causes why the mutton trade of Chicago has increased faster than the pork or beef trade, or over 1,000,000 more for that city in 1889 than in 1880. Nearly all the sheep that go to that market from Illinois are grain-fatted, and there are more of the Down breeds than formerly. The largest consumers of meat—the hotels and restaurants—require double the quantity of mutton that they did five years ago, and the consumption is increasing.

But of the more than 1,000,000 sheep eaten in Chicago in 1889 Illinois raised less than one-sixth, and this, too, while sheep sold for an average of more money per pound than cattle for the four preceding years, and for some part of that time for more than hogs. Official reports for the State of Illinois show that for 1889 and 1890 the average price for cattle was $3.08 per 100 pounds, for hogs $3.65, and for sheep $3.72. The cause of the neglect of the mutton industry is stated by Mr. Garland:

> There is a too common tendency to look upon flock culture as mainly a business of wool-growing. In fact the nominal State organization of sheep owners in Illinois calls itself a "Wool-Growers' Association," thus impliedly ignoring the fact that

sheep are good for some other purpose than producing wool. The effect of this tendency, combined with recollections of past experiences, has been to divert attention from the sheep as a factor in meat production. And this in face of the fact that a pound of mutton can be produced as economically and sold for as much money as can be had for a pound of either beef or pork. Restricting estimates of profit from sheep to the quantity and selling value of wool is seriously misleading, inasmuch as it excludes a very important factor from the calculation. And this fact must be kept in mind when laying the foundation of a flock, as well as through all subsequent manipulations. The type of sheep to start with is one with a good body as well as a bountiful fleece; and in all future breeding and feeding care must be taken to preserve this equilibrium of merit. It is the failure to get the most possible out of carcass as well as from fleece that has encouraged the too prevalent belief that sheep husbandry can not be profitably pursued on valuable agricultural lands. The mistake in such conclusion becomes apparent when we recall the fact that English farmers find some profit in sheep when kept on lands valued at $100 to $300 per acre. True, the price obtained for mutton is higher there than here, but there is no such disparity in price between the two markets as to explain the variance in estimates of the value of sheep in a diversified agriculture. The explanation must be sought in the type of sheep and the peculiarities of management that obtain in the two countries. In England, where fields have been cropped for the lifetimes of four and five generations, experience has forced the farmer to have regard for the preservation of fertility in his lands, and he credits something to the sheep that contributes to this end.

The raising of early lambs is now followed to some extent by many farmers, and proves to be a profitable business. Fattening mutton for the fall market is also pursued to a great advantage where the farmer has good pasturage, particularly blue grass. The fattening of Western sheep is a large business. Carload after carload comes into the Chicago market from the country beyond the Mississippi. The sheep are purchased by the farmers, sometimes for a song, run out to their farms, fattened on corn and hay, if in the fall or winter, and sold at a good round profit, the farmer retaining on his land that which enriches it beyond the capacity of any manufactured fertilizer.

But, notwithstanding the great advantages possessed by Illinois as a sheep-raising State, the number of sheep has long been on the decline. The following table, giving the number of sheep from 1840 to 1890, shows this at a glance. The figures from 1840 to 1880 are taken from the United States census; those for 1890 from the U. S. Department of Agriculture. The decline from 1870 to 1890 is remarkable. The great decline from 1880 to 1890 began about 1884, when mutton and wool were both low, but continued even after mutton had advanced in price.

Year.	Number of sheep.	Wool.	Average weight of wool per head.
		Pounds.	*Pounds.*
1840	285,872	650,097	1.64
1850	894,043	2,150,113	2.40
1860	709,135	1,989,567	2.58
1870	1,569,286	5,739,249	3.66
1880	1,037,073	6,003,066	5.87
1890	688,387	4,144,069	6.02

The Illinois State agent for the U. S. Department of Agriculture, in his report for January, 1890, says:

There has been a steady decline annually in the number of sheep, the decline commencing about 1884. The falling off in numbers the past year can not be chargeable alone to the lower price of mutton, as the market is quite as good for mutton as last year. Mutton breeds are receiving more attention, and only for the prevailing low price of wool and the heavy loss annually by sheep-killing dogs this class of farm animals would rapidly increase upon our farms in all parts of the State. A tax of $1 per head is laid upon all dogs in the State, and this fund is intended to cover the loss and damage to sheep by worthless curs, yet in some counties it pays only about one-half of such damage and loss.

And again, in January, 1891:

From 1884 to 1889, inclusive, there was a steady falling off in the numbers of sheep. The better prices of mutton and wool for the past year or two are again bringing this class of farm animals to the front. Only for the risk of loss and injury by sheep-killing dogs a flock would soon be found on most of the farms of the State.

Over 4 per cent of the sheep of the State are killed annually by the dogs, the number in 1890 being about 28,000.

In a recent address before the Farmers' Institute, at Farmer City, Ill., published in the Breeders' Gazette May 6, 1891, Mr. A. M. Garland called attention to the great decrease of sheep in the State. There was a time when the census of her flocks outnumbered that of her people, while now she has less than 1 sheep to 6 inhabitants, or but little over 630,000 sheep to her 35,000,000 broad acres. This was less than 1 sheep to 56 acres, less than 3 to each quarter section. She had less than 1 sheep to 3 head of cattle, less than 1 sheep to six hogs. Taking the State as a whole, in round numbers, there were 16 acres per head for cattle, 9 acres per head for hogs, and 56 acres per head for sheep. In the face of such facts and the annual decrease of the yield of wheat per acre, Mr. Garland found warrant for asking why these things were so, and if it was not high time for a change.

With as good soil as can be found in the world—most of it in virgin sod since some of us were born—and with all the appliances of modern invention in the hands of its farmers, this great State figures an annual average of about 12 bushels, while the more intensive agriculture of England is frequently rewarded with 30 bushels per acre from lands that have been cultivated for two hundred years. Of course, this difference is not all attributable to sheep; but there is much in the fact that England carries about 60 sheep to 100 acres—more than 30 times the proportion carried in Illinois. It would require that about half of all the sheep in the United States should be crowded into Illinois to stock the State proportionately with England.

Do not understand me as saying that we should imitate England to the extent of accepting and adopting all the details observed by the farmers of that nation. Over there are found climatic, economic, and commercial conditions that can not be, and some of them ought not to be, duplicated in this country. What I seek to emphasize is the importance of ascertaining when and where and how the sheep can be made to bring better returns from the farm than other domestic animals, and when these facts are determined we can safely leave the result to the future. Once thoroughly impressed by the facts, the intelligence and enterprise of the farmers of the country, seconded by the ever-augmenting necessity for climbing out of old ruts, will

in time induce them to give sheep a place on American farms as generally as is now done in some other countries.

It is not the peculiar methods of English sheep-raisers that I would have the farmers of this country follow with rigid exactness; it is their persistent, intelligent determination to obtain the type of sheep best suited to each particular locality, and through this to secure profits from whatever product of the soil that such sheep can utilize to better advantage than can be secured by any other means. With wool and mutton for some of the time selling at nearly the same price per pound, the English breeder has been encouraged on the extreme policy of devoting more attention to carcass development than to improvement in the character and weight of fleece—just as breeders in the United States have been encouraged by the higher relative price of wool here to overlook the carcass and give prime consideration to fleece.

To Mr. Garland's mind, among the most encouraging aspects of the sheep husbandry of the United States was the fact that so many Merino breeders were zealously working to get good mutton and big fleeces from the same animals, and he was glad to know that some of them had already succeeded. And they had succeeded with the type of sheep within their reach, material that was economically and readily available.

And for the present, and indefinitely in the future, the majority of flocks on Illinois farms will have a foundation of grade animals upon which should be used pure-bred rams of such type as the owner may deem best after a careful study of his surroundings. Starting at this point, placing the standard high, rigidly culling out from the breeders all animals that fall short, and giving to the remainder the best possible facilities for rapid and extreme development, will very soon secure a flock that will pay its way, no matter what the market for sheep products. It is the inferior and medium products of the farm that hang heavy on the market and compel concessions to buyers. The best of its kind not only sells promptly, but it sells at the top of the market, and sheep products are no exception to the rule.

MICHIGAN.

We preface our sketch of the Merino sheep of Michigan by adopting the language of the Michigan Merino Register in presenting its favorable condition and the natural advantages of the State in 1885:

Possessing, as she does, a variety of soils and surface yielding a number of grasses, both natural and tame, with large belts of partially cleared lands, which have been stripped of their best timber by our lumbering companies (especially north of latitude 43°), where the grade Merino sheep can be kept for a double purpose, being especially adapted to subduing such lands as well as producing wool and mutton, Michigan is a natural habitat of the Merino sheep, made such by her soil and climate, while they are needed to keep up the fertility of her lands and work up the straw in winter (which is a natural result of the immense crop of wheat raised within her borders), and prepare it for use in nourishing the soil which such crops necessarily draw upon so heavily. This State also promises uninterrupted prosperity to the sheep-breeder and wool-grower from the comparative cheapness of her lands and the condensed form of her products, which renders remote markets available to them which otherwise they would be unable to reach.

The Merino sheep saw the State at the beginning of its prosperity—in fact it grew up with the country—and when the pioneer had killed the wolf and made a clearing the valuable Merino was there to clear

away the briers, furnish the family raiment, and supply the table when game was scarce.

Our first record of the Merino is in 1828, when Stephen V. R. Trowbridge, of Oakland County, began with a flock of 18 sheep, and without purchasing any, and killing and selling 500, had in 1851 over 450. They were full-blooded Spanish Merinos, and were found to thrive above all other sheep. They became very fat and hardy, and their wool improved greatly in quality. The average clip of the flock in 1850 was 3 pounds, and the produce in lambs was annually over three-fourths the whole number of ewes. This success was common with hundreds in the county.

In Washtenaw County the improvement of Merino sheep began prior to the year 1836. Mr. Thomas Wood, of Saline, imported a ram from the State of New York, and subsequently two more from the flock of Edwin Hammond, very soon after Mr. Hammond made his purchase of Stephen Atwood. Afterwards Mr. Wood tried a ram from the Rambouillet government flock of France, which proved very unsatisfactory. This was about 1850. Mr. Wood continued his untiring interest in the business, and did as much, perhaps, as any other man in that part of the State to create an interest in fine sheep, furnishing improved blood for many flocks in that section, and keeping a flock of from 600 to 1,200 sheep. Capt. Lowry, of Lodi Plains, Washtenaw County, was among the first, if not the first, to import thoroughbred ewes from Vermont into this locality, which he did about the year 1840. He purchased of Mr. Townsend, in Vermont, ten ewes and a ram, which improved the sheep in this vicinity, and in 1850 to 1852 a goodly number of flocks were brought in by parties from Vermont.*

In 1840 a flock was established at River Raisin by D. W. Palmer & Sons, by a purchase of 5 pure-bred Merino ewes of Henry S. Randall, of New York, and in 1840 or 1841 a Mr. Dryer purchased of John Hiles, near Farmington, Oakland County, 10 ewes, for which he paid $7.50 each. These sheep were taken to Ingham County, and were protected from the wolves by means of oak slabs, one end driven into the ground, placed close together, and forming an inclosure with a fence 7 feet in height, in which they were yarded for four years. These sheep formed the basis for several flocks in that county.

In 1840 the number of sheep in the State was 99,618, producing 153,375 pounds of wool, as given by the census, or but 1½ pounds per head, an evident understatement. From this date the increase was rapid, and in 1850 there were 746,435 sheep, producing 2,043,283 pounds of wool. This great increase leaves little trace of its history. Flocks by hundreds came in from New York, Pennsylvania, and other Eastern States; wool-growing assumed great proportions, and Detroit became a point of export for wool grown on the hills and meadows of

* Register of the Michigan Merino Sheep Breeder's Association, Vol. 1.

the southeastern part of the State. In 1841, Detroit exported 20,000 pounds; in 1844, 230,000 pounds, and in 1847, 1,000,000 pounds, and the wool-growers of the East felt the growing competition of the great West. In 1848 H. K. Fritz, of Jackson, purchased of the Guadaloupe flock of J. N. Sawyer, Salisbury, N. H., 25 rams and 100 ewes, and bred them pure until 1854, when he crossed them with the French Merino, and the average weight of the fleece was increased thereby to 5 pounds. In other cases a cross half Spanish and half French Merino was very successful. About 1848 Ansel Nichols established a flock by the purchase of 10 pure-bred ewes, bred by R. J. Jones, of Cornwall, Vt., to which was added 2 more ewes in 1864 from the flock of O. C. Bascom, of Vergennes, Vt. From this flock came the foundation of the flock of T. M. Southworth, Allen, Mich., who, in 1871, purchased 30 of the Nichols flock, and has bred pure sheep to the present day, using Vermont rams and those bred in the flock. Among other flocks started at this period were those of George Gale, of Superior, Thomas Spafford, of Manchester, and W. S. Crafts, of Sharon, who did much with their flocks and influence to maintain and increase the demand for fine Merino sheep. Judge Compton, of Ypsilanti, also formed a flock, which he crossed soon after with one of the Taintor importation of French rams.

A part of the celebrated Rich flock was taken into Lapeer County in 1848. In that year John W. Rich purchased a few ewes and two or three rams from the flocks of J. T. and V. Rich, T. Stickney, and D. and G. Cutting, of Vermont. The ewes were bred to the rams taken to Lapeer until 1851, when a ram was purchased of J. T. and V. Rich and used a number of years. In 1853 10 ewes purchased of Tyler Stickney were added to the flock, and about the same time Thomas Slayton, of Lapeer, purchased a few ewes and a ram of T. Stickney. The Slayton sheep were bred pure until 1859, when the entire flock was purchased and incorporated in the Rich flock. This excellent flock is still in existence, the property of John T. Rich, Elba, Mich.

Michigan had a great advantage in forming her wool-growing flocks, in the fact that they were formed almost directly from thoroughbred sheep of the best kind, which were taken into the State in great numbers, and in 1850 the larger portion of the sheep were pure Merinos or high grades. In some localities, however, the sheep were mostly of the coarse-wool varieties, with some small proportion of Saxon and Merino blood. This was the case in Lenawee County, but imported breeds were fast being introduced from Vermont and western New York, and other Eastern States. A large amount of wool was raised, much of it retained for home manufacture. This county carried more sheep in proportion to its population than any county in the State. Washtenaw County found wool-growing very profitable, and next to wheat-growing it was the chief business of the farmers. It cost 15 cents to grow common wool, 18 cents to grow Spanish Merino, and 25

to 35 to grow Saxon. There was little difference in the selling price of wool, and the Spanish Merino was found the most profitable to keep. Native ewes reared their own number of lambs, the Saxony and Spanish Merino about half their number. From 1848 to 1852 several Paular rams and ewes were brought from Vermont and French Merinos were introduced also, and many flocks increased the average amount of wool per head from 2¾ to 4¼ pounds. In Wayne County wool-growing was found very profitable, and the farmers improved their sheep by buying large numbers of the fine-wooled rams of New York and Vermont. Common sized sheep of fine wool and long staple were deemed the most profitable, and a pound of wool could be grown on a cross of the French and Spanish Merino as cheaply as on the common coarse-wooled sheep, consequently the finer grades were grown. By careful breeding the sheep of the country improved in size and constitution, and the wool increased in fineness, length of staple, and quantity, and in 1854 a large proportion of the flocks were composed of a high grade of French and Spanish Merino, a well-kept flock of the kind averaging 4 pounds washed wool. In Macomb County wool-growing was the most profitable business farmers could engage in, and pure-blood Spanish and French Merinos were the sheep preferred. A majority of the wool-growers obtained their best sheep from Vermont, and the grade of wool improved rapidly. The sheep ran upon the fallow lands in the summer, and in the winter went to the straw stacks till towards spring, when hay and a little grain were given them. It cost 20 to 30 cents to raise wool, which (1854) varied in price from 28 to 38. The ordinary profit was 50 cents per sheep and the increase in lambs. Pelts were sold from 30 cents to $1, and tallow at 10 cents per pound.

At this time causes were operating to limit the country's supply of wool, while the demand was increasing. The eastern farmers and those of the Middle States, in the proximity of large cities where land was advancing in price, had abandoned wool-growing, and those more remote from cities had turned their attention to producing butter, cheese, beef, and mutton. Ohio was about holding her own in wool cultivation, while Indiana, Illinois, Wisconsin, and Michigan were increasing their flocks, though not in sufficient number to supply the deficiency. The drawback to Michigan was the want of capital. There was an increase in 1852, but the scarcity of fodder compelled the slaughter of many sheep for their pelts and tallow.

With the increase of the Merino came also the introduction and increase of the improved English sheep. Many crosses were made of the English breeds with the Merino and with apparent success, those of the Leicester and the Merino being most common and most satisfactory. There was much experiment of this kind from 1850 to 1860. In the latter year J. S. Tibbits gave the result, in wool, of a cross of a Southdown ram on three-fourths blood Spanish Merino ewes. The ram weighed, before shearing, 215 pounds and gave a fleece of 9 pounds

washed wool. Fifteen yearlings, the result of this cross, gave from 5¼ pounds to 8 1/16 pounds of washed wool, which sold at 42 cents per pound.

While the average yield per head of Merino wool-growing flocks was about four pounds, many sheared much higher. These, however, were choice flocks and mostly kept with the view of breeding from. In 1854 J. B. Collins, of Washtenaw County, from over 100 Spanish Merinos sheared an average of 5 pounds 13 ounces each fine wool. In the same year there was a shearing at Ann Arbor, and 6 rams showed this result:

Four-year old, with fleece on, weighed 136 pounds, 8 ounces; fleece weighed 8 pounds 11 ounces.

Four-year old, with fleece on, weighed 133 pounds; fleece weighed 9 pounds 8 ounces.

Five-year old, with fleece on, weighed 139 pounds; fleece weighed 11 pounds 11 ounces.

Three-year old, with fleece on, weighed 156 pounds; fleece weighed 12 pounds 6 ounces,

Three-year old, with fleece on, weighed 118 pounds; fleece weighed 13 pounds 6 ounces.

Four-year old Saxon, with fleece on, weighed 117 pounds; fleece weighed 6 pounds 1 ounce.

In the following year Benjamin Perrine sheared a three-year old ram of 13 pounds 5 ounces washed wool. These figures are modest compared with the fleeces of the present day, but they may serve as a basis for reference in that great improvement that carried fleeces up to 15, to 20, to 25, to 30, and so on to 44 pounds 4 ounces, reached by Diamond in 1884. The improvement during these thirty years was phenomenal.

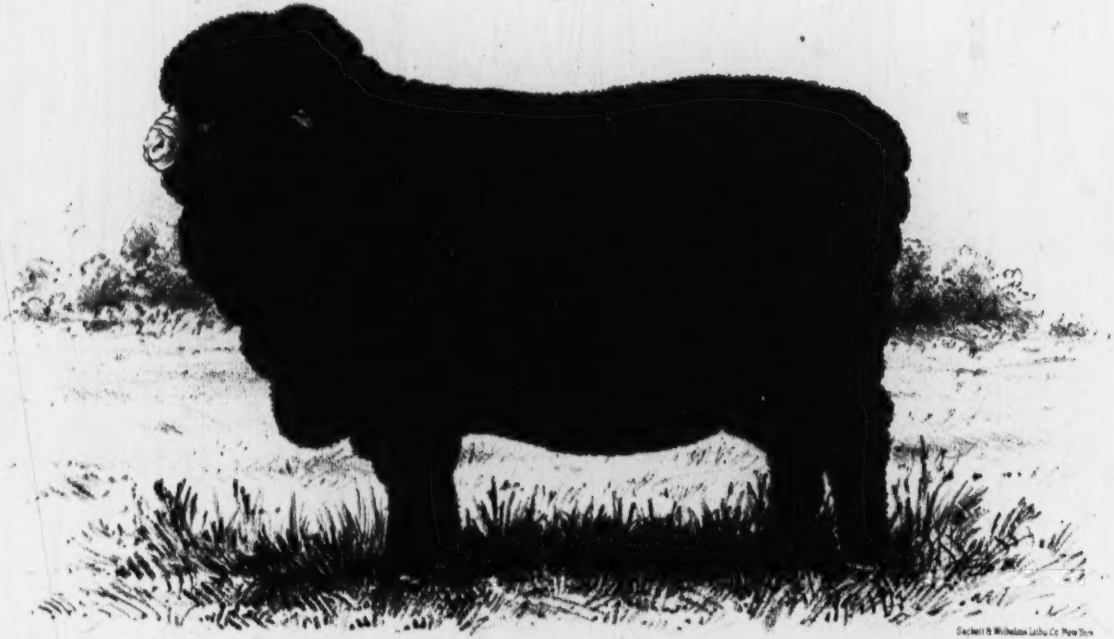
There were many full-blooded flocks established between 1850 and 1855, but the record of them is defective. The Wood Brothers, of Saline, and Philo Rich, of Salem, established flocks and brought many sheep from Vermont. The Michigan Register admits none of these earlier importations except a very few from well-known and established flocks, one of the earliest flocks admitted being that of A. D. Taylor, of Romeo, Macomb County, established between the years 1850 and 1855 by a purchase of some ewes and rams of Hiram L. Taft, West Bloomfield, N. Y., and subsequent purchases were made from Mr. Taft of ewes and rams. The Taft flock came through R. A. Avery from the flocks of Stephen Atwood, of Connecticut, and Alfred Hull, of Vermont. This is a noted flock, has a splendid record for what it has accomplished, and it still exists.

In 1856 S. A. Colby & Son, of Romeo, established a flock by the purchase of 3 ewes from Mr. Taylor, and used rams from the Taylor flock. The flock still exists. In the same year Robert Garner, of White Lake, bought a pure-bred flock of Vermont Spanish Merinos. In 1860 his flock of 116 sheared 726 pounds of wool, an average of 6¼ pounds per head, all washed on the sheep's back. The fleece was of 11½ months growth.

HAINES, DEL.

MERINO RAM "PREMIER" (C. P. CRANE, 138), 846.

FROM "REGISTER OF THE MICHIGAN MERINO SHEEP BREEDERS' ASSOCIATION," VOL. I, 1885.



HAINES, DEL.

PURE ATWOOD MERINO EWE.

FROM "REGISTER OF THE MICHIGAN MERINO SHEEP BREEDERS' ASSOCIATION," VOL. I, 1885.

In 1851 B. Peckham, of Calhoun County, established a flock by the purchase of 10 ewes from J. W. Hyde, and 5 from L. H. Yates, of Darien, Genesee County, N. Y. In June, 1852, 50 ewes were purchased from J. W. Hyde. These were all pure-bred sheep, and put to rams bred by Stephen Atwood, of Connecticut, Edgar Sanford and Tyler Stickney, of Vermont, and Reed Burritt, of New York. The flock, or a greater part of it, was transferred to J. Eastman and A. Bruise, of Albion, Mich.

About 1853 B. S. Williams, of Kalamazoo, purchased of Hon. Charles E. Stewart, of the same place, some choice breeding ewes, said at that early day to be entitled to record as pure-bred Merinos. Another purchase was afterwards made from the flock of Enoch Knapp, one of the leading breeders of thoroughbred Spanish sheep in Michigan. In this purchase were the original sheep imported from Vermont and sold to Mr. Knapp for $100 per head. Rams used in the flock were pure-bred sheep from Vermont and western New York.

In 1856 David H. Speer, of Somerset County, laid the foundation of a flock by the purchase of 11 ewes of Storrs Craft, and in 1864 of 2 ewes from Jerry Van Gieson. Atwood rams were used in the flock.

Messrs C. A. Miller & Sons, of Marshall, own a flock the foundation of which was laid in February, 1857, by the purchase of some ewes from Daniel Cleburn, of Marengo. These ewes were bred by and purchased of R. P. Hall, Cornwall, Vt. A ram dropped by one of these ewes was used on the flock until 1865, when one was purchased of George J. Brown, of Battle Creek. After 1870 many ewes and rams were added to the flock by purchases from the best Vermont, New York, and Michigan flocks, all tracing to the importations of Humphreys, Jarvis, and Cock.

A noted Michigan flock was that of J. Evarts Smith, of Ypsilanti. This flock was established at Westport, N. Y., October, 1862, by the purchase of 58 Atwood and Robinson ewes from the Edson Bush flock, of Shoreham, Vt. The Edson Bush flock was started many years before by the purchase of one entire crop of ewe lambs from the J. Thurman Rich flock and some old ewes from the Erastus Robinson flock, afterwards using some rams from the flock of Edwin Hammond. In December, 1863, 6 Hammond ewes were purchased. In 1866 the flock was taken to Michigan and 3 ewes, bred by E. S. Stowell, of Cornwall, Vt., were purchased. The rams used were Golden Fleece, Sweepstakes, Gold Drop, Green Mountain, and others, all of the purest blood.

In 1863 Palmer & Rhead, of Norvell, established a flock by a purchase of 9 ewes of E. D. Searl, of Cornwall, Vt., and 2 ewes of W. L. Hughes, of the same place. In 1864 five ewes were purchased of Pitts & Wiley, Honeoye, N. Y. Vermont rams were used on the flock and on its increase. During the same year, 1863, L. Strong, of Hillsdale County, established a flock by a purchase of 3 ewes of E. Townsend, New York, for which he paid $200. In November, 1865, he made another purchase of 20 ewes bred by E. G. Farnham, Vermont, all of

which were pure bred. He used pure-bred rams, one of which was purchased of Mr. Townsend.

In 1864 Van Gieson Bros., of Clinton, established a flock by the purchase of a ram and 25 ewes of Jerry Van Gieson, that had been bred by George Wood & Son. In 1866 nine ewes were bought of Wood & Son, and the flock was increased by additional purchases of pure-bred ewes and rams.

In 1865 Albert G. Ayers, of Jackson County, originated a flock by the purchase of 8 ewes from Abraham Stocking, of York, Livingston County, N. Y. These ewes were bred by Edwin Hammond, of Vermont. About the same time he purchased of Walter Hulbert, of Cornwall, Vt., 5 ewes, and of George Clarke, Orleans County, N. Y., 12 ewes. A ram was purchased, bred by N. G. Barber, for which Mr. Ayers paid $250, and another bred by Abraham Stocking. Albert I. Ayers afterwards came in possession of a portion of this flock.

In 1864 or 1865 William Ball, of Livingston County, commenced a flock by a purchase from F. & L. E. Moore, of 21 ewes, sired by Small Tom, a noted ram, bred by D. E. Robinson, Shoreham, Vt. In 1874, in company with E. W. Hardy, 19 ewes were purchased of E. D. Bush, 25 of B. B. Tottingham, and 29 of James Forbes, jr. In 1874–'75 sixty ewes were purchased of H. W. Jones. All these combined the blood of the Cock, Jarvis, and Atwood flocks. In 1875 thirty-five ewes were purchased of L. E. Moore, bred by William Cook and James Forbes, jr. These last combined the blood of the same flocks as the others. The rams purchased or used on the flocks were of Atwood, Robinson, and Cutting blood. In 1883 the flock numbered 69 rams and 111 ewes.

The multiplication of flocks from this time on renders an account of them impracticable, and the Michigan Register supplies the record of many of the pure-bred flocks formed after 1865 and to the present time. Enough has been given to show the origin of the Spanish Merino flocks of the State and to demonstrate the high character of the blood.

Wool continued to be one of the great staple productions of the State, and upon the sale of it a large proportion of the population depended for much of their income. The people did not consume their wool in domestic manufacture, had no surplus capital to invest in factories, and consequently the clip was exported. In 1850 the State had 746,035 sheep; in 1854 it had 964,333, or an increase in four years of 217,898 sheep. Wool increased to 2,680,747 pounds, a gain of 637,464 pounds in four years. In 1850 the average ratio of wool to a sheep was 2.73 pounds; in 1854 it was 2.78 pounds.

In 1856 a flock of 400 Spanish Merinos sheared an average of 5 pounds 2 ounces of wool each, and many more are recorded as doing quite as well. William Beal sheared 223 sheep in 1857 that averaged 5 pounds. The same flock, 283 in 1858, averaged 4 pounds, and the shrinkage was accounted for by the mild winter preceding and heavy rains. In 1858 Thomas Spafford, of Washtenaw County, sheared a flock

of 140 Merinos, averaging 6¾ pounds each. In the same year S B. Palmer, of Norvell, sheared 8 rams and 15 ewes, whose combined fleeces weighed 191 pounds 14 ounces, an average of a trifle over 7 pounds 6 ounces. The same flock clipped an average of 6⅞ pounds in 1859, and 7¼ pounds in 1860.

The United States census of 1860 gave Michigan 1,271,743 sheep and 3,960,888 pounds of wool. Of this wool about one-third graded as high as three-quarters and full-blood Merino; one-third, or a trifle more, from quarter grade to half Merino; and a little less than one-third coarse wool. For a few years the coarse-wooled sheep had been increasing in greater proportion than the fine-wooled ones. The time had come when it was found as profitable, and in many localities more so, to raise mutton and wool than it was to raise wool exclusively. In 1858 fine wool sold at 35 cents and coarse at 40, and the farmer found that his coarse-wooled sheep paid him 50 to 55 cents more than his fine-wooled ones. Fine wool went up to 47 cents in 1859, and coarse fell to 38, and yet the coarse-wooled sheep paid better by 13 to 15 cents, and had the advantage of giving nearly one lamb for every ewe. Besides this the eastern markets were calling for mutton, and thousands of low grades were shipped to meet the demand. At Ann Arbor alone, in 1857, one thousand six hundred were shipped to New Jersey, 2,700 were shipped in 1858, and 2,000 in 1859. This business paid better than wool-growing, and, in consequence, some fine-wool flocks were neglected or crossed with coarse-wooled sheep. Yet less of this was done in Michigan than in most other States. There was also a movement in another direction. Wool-growing was increasing beyond the Mississippi and in Texas with great rapidity, and thousands of Spanish ewes found their way from Michigan westward.

The wool industry, however, was not suffered to be much depressed. Breeders went on improving their sheep and growers culled their flocks and reached for a higher standard. For some years prior to 1860 four varieties of the Merino were depended upon for fine wool; the Spanish, the Saxon, the French, and, later, the Silesian. It was considered beneficial to cross the flocks of Spanish, or rather of grade Spanish with the larger size and drier-wooled French Merino, though this cross did not seem to find favor with many who tried it. But the crossing was not always attended to with the fidelity and judgment required to lay the foundation of a family or a flock which should have the ability to perpetuate certain estimable qualities. Hence, after a few years, the cross ran out, or bred back, with acquired qualities in the fleece and form, which were far from desirable. The Saxons had already been partially discarded, and from 1860 the elimination of the French and Silesian blood was decreed, and the improved Spanish Merino depended upon. Old blood was purified and new blood introduced.

Wool-growing greatly revived in 1862 and 1863; Merinos in great numbers were brought in from Vermont, and in 1865 there was a perfect mania for publishing records of heavy shearings.

At a shearing in Macomb County in 1865 a 3-year-old ram recorded 19⅛ pounds, a 2-year-old 16¼ pounds, and a 1-year-old 12½ pounds. At Jonesville prizes were given for the three heaviest ram fleeces and the two heaviest ewe fleeces in proportion to weight of carcass. A 5-year ram, whose gross weight was 116 pounds, gave 18⅞ pounds of wool and took first prize. A 2-year-old ram, weighing 106 pounds, gave 16⅜ pounds of wool and took second prize, while 11 9/16 pounds of wool on a yearling ram of 85 pounds took third prize. A 3-year-old ewe, weighing 87 pounds, gave 11 5/16 pounds of wool, and a yearling, weighing 47 pounds, gave 8 3/16 pounds.

Heavy fleeces are not an invariable indication of much wool. Ohio, New York, and Michigan this year made a test of the shrinkage of wool by scouring. In Michigan it was made at Jonesville, with the following result:

Sex.	Fleece unwashed.	Fleece scoured.	Loss.
	Lbs. *oz.*	*Lbs.* *oz.*	*Per cent.*
Ram	9 8	3 14½	58.8
Do	14 8	5 15½	58.8
Do	14 8	5 10½	60.9
Do	16 0	4 5½	72.8
Do	15 0	6 1½	59.3
Do	11 0	4 3½	61.6
Ewe	9 8	3 12½	60.1
Do	11 8	4 12½	58.4
Do	10 8	3 12½	63.3
	12 0	4 10½	61.1

This shows an average weight of unwashed fleeces of 12.40, cleaning 4.70 pounds of wool, or a loss of 61.5. New York showed the average of 14 unwashed fleeces to be 12.63, cleaning 4.61 pounds, or a shrinkage of 62.7. Seventeen Ohio unwashed fleeces showed an average of 16.89 each, which when cleaned weighed 5.61, or a loss of 65.5 per cent. Michigan: Ten fleeces, 12.40; cleaned, 4.70; loss, 61.5 per cent. New York: Fourteen fleeces, 12.63; cleaned, 4.61; loss, 62.7 per cent. Ohio: Seventeen fleeces, 16.89; cleaned, 5.61; loss, 65.5 per cent.

There was now a demand for long wool and a consequent change to coarse and long wooled sheep. Speculators introduced into almost every part of the State coarse-wooled sheep of every grade and of all kinds, mostly from Canada, and sold them for Leicesters, Cotswolds, Southdowns, or any other breed, and in fact they were a mixture of all. These were crossed indiscriminately with each other and with the Merinos. A few years' experience demonstrated the mistake that had been made, and the mixed coarse-wools were generally disposed of as well as possible, and the Merinos were again in demand. Large numbers of these coarse-wooled sheep, from 1868 to 1870, were slaughtered and disposed of for their pelts alone, which was considered by many

as the most profitable and commendable thing to do, as it gave the sheep industry a healthy pruning. But among these coarse-wooled sheep were some of undoubted purity and much worth, which were bred, and with good results. The Cotswold was a favorite, particularly to cross on the Merino. The progeny was esteemed a good mutton sheep.

The census of 1870 showed 1,985,906 sheep and 8,726,145 pounds of wool, an increase of 714,163 sheep, or 56 per cent since 1860, while the yield of wool had more than doubled in the same time. The average yield per head was 3.11 pounds in 1860, and 4.39 pounds in 1870.

There was a gradual improvement in the market for fine wool after 1871; flocks were enlarged and new ones formed. The growth of the industry was steady and healthy. The flocks were preserved in purity and their increase was conservative. As a rule the inferior sheep were weeded out and only the best kept. With the general improvement came notices of sheep shearings and yield of flocks. In 1872 C. P. Hooper, Macomb County, sheared 5,000 pounds washed wool from 1,000 sheep, which he sold for $3,000. At a shearing in Calhoun County in 1875 four rams gave this result:

Sex.	Live weight.	Weight of fleece.
	Pounds.	*Pounds.*
Three-year-old ram	134	26
Two-year-old ram	113	24¼
Do	122	23
Three-year-old ram	113	22⅝

In May, 1876, Lyman Cate, of Highland, sheared 20 yearling rams that averaged 14 pounds of wool each; 1 sheared 18½ pounds. Mr. Cate was the owner of the ram Highland Chief, which sheared for its first fleece 22½ pounds, second fleece 34¾ pounds, and third fleece, in 1877, within a very small fraction of 35¾ pounds.

On May 4, 1876, Messrs. Wood Bros., of Saline, sheared 9 ewes of 131 pounds of wool, an average of 14⅝ pounds each, one 3-year old ewe giving 20 pounds. Thirteen rams were shorn, 7 yearlings, and 6 2 years old and upwards. Two of the 2-year old weighed over 160 pounds each and gave over 22 pounds of wool. The 7 yearlings averaged 112⅞ pounds each, live weight, and yielded 15⅞ pounds each of wool. One weighed 132 pounds and was sheared of 17½ pounds of wool.

At the annual State shearing of 1879 6 rams were shorn, giving 20 pounds and upward of wool, as follows: 20¼, 21¼, 21½, 22, 23¼, and 26¼ pounds. The general average of 16 shorn was light, as compared with other years and other States.

In April, 1882, there was a public shearing at Manchester, and from the record made by the secretary of the Michigan Merino Sheep Breeders' Association, the following results are compiled:

Sex.	Weight of carcass.	Weight of fleece.	Growth of fleece.
	Pounds.	*Pounds.*	*Days.*
Three-year-old ram	142	29	365
Two-year-old ram	110	17½	361
Do	143	24½	366
Do	116	21	384
One-year-old ram	113	24½	397
Do	96½	21½	398
Do	97	20	395
Three-year-old ewe	87½	18	380
Do	71	18½	380
Two-year-old ewe	82	24½	380
Do	79	22	380
Do	67	16½	345
One-year-old ewe	71	16	398

First annual shearing exhibition of the Michigan Merino Sheep Breeders' Association, held at Lansing, Mich., April 14 and 15, 1883.

Description.

Sex.	Age in years.	Constitution.	Form.	Weight of carcass.	Folds.	Quantity of oil.	Color of oil.	Fleece.			Covering.			Weight of fleece.	
								Days growth.	Length.	Density.	Head.	Belly.	Legs.		
				Lbs.					*In.*					*Lb.*	*Oz.*
Ram	5	5	4	110½	4	4	Buff	363	2½	4	4	5	5	24	15
Do	4	5	5	134	5	4	....do	344	2	4	5	5	5	31	2
Do	3	5	5	121	5	4	....do	362	2	4	5	4	5	25	0
Do	5	5	4	126½	5	4	....do	341	2	4	4	4	5	27	0
Do	4	5	4	113½	4	4	....do	360	2½	5	3	3	3	25	11
Do	3	5	5	109	5	5	....do	352	2½	4	5	5	4	26	1
Do	3	4	4	117½	5	5	....do	344	1½	5	3	3	4	33	8½
Do	3	4	3	119½	4	2	White	377	2½	3	5	3	4	22	1
Do	2	4	3	96	3	5	Buff	377	1½	3	3	4	3	28	1
Do	2	5	4	135	4	5	....do	363	1½	4	3	3	4	41	3
Do	2	5	5	126	3	5	....do	337	1½	4	2	3	3	24	0
Do	2	4	4	82	5	4	....do	364	2½	5	4	5	3	22	9
Do	2	5	4	105	5	5	....do	359	2½	4	4	4	5	27	0
Do	2	5	5	113½	5	5	....do	362	2½	5	5	5	5	26	3
Do	2	4	4	106	3	3	White	378	2½	4	3	3	3	27	8
Do	1	5	5	100½	5	4	Buff	414	2½	5	2	3	3	18	2
Do	1	4	3	91½	4	5	....do	414	2½	5	4	4	5	22	11
Do	1	4	4	83½	4	4	....do	344	1½	5	4	3	4	13	9½
Do	1	5	5	103	5	5	....do	412	2½	4	4	3	5	21	9
Do	1	5	5	80	5	4	....do	398	2½	5	5	3	5	13	12½
Do	1	4	4	78½	4	3	....do	273	2	4	2	4	3	15	8
Do	1	4	4	75	3	3	White	358	2½	4	3	2	3	13	4
Ewe	3	5	5	106½	3	4	Buff	335	2½	3	3	3	2	16	13
Do	3	5	4	86	3	4	White	357	2½	4	3	3	3	13	13
Do	3	4	4	76	3	5	Buff	362	2½	4	5	5	3	20	15½
Do	2	4	4	74½	3	4	White	362	2½	5	5	5	3	18	8
Do	2	4	4	70½	4	4	....do	361	2½	4	5	4	4	17	12
Do	2	4	4	57	3	3	....do	347	2½	4	5	5	4	13	8
Do	2	5	4	79½	3	4	Buff	362	2½	4	5	5	4	15	1
Do	1	4	4	66	3	4	....do	414	2½	3	4	4	4	17	4
Do	1	4	4	75	4	4	....do	380	2	4	4	3	4	13	12
Do	1	4	3	53	3	4	White	350	2½	4	4	4	4	10	8
Do	1	4	4	56	3	4	Buff	442	3½	4	4	5	4	17	12
Do	1	4	4	60	5	4	....do	399	2½	4	4	4	4	14	3½
Do	1	5	5	68½	5	3	....do	389	2½	4	4	3	3	12	2
Do	1	4	3	59	4	4	White	271	2½	5	4	4	4	11	14
Do	1	4	4	61	5	5	Buff	356	2½	5	5	5	4	15	4
Do	1	5	5	79	4	3	White	360	2½	4	5	4	4	13	14
Do	1	5	5	71½	4	4	....do	333	2½	5	4	4	4	15	2
Do	1	5	5	55½	4	4	....do	383	2½	5	5	4	4	13	1
Do	1	5	4	72½	4	5	....do	366	1½	4	3	4	3	14	10½

There was but little difference in the second annual shearing in 1884 from that of 1883, except the advance of the ram Diamond from 41 pounds 3 ounces to 44 pounds 4 ounces. Diamond was the property of A. T. Short, and was bred by A. A. Wood, of Saline, in 1881. His first fleece was 24 pounds 4 ounces. He was of Atwood and Robinson blood. At the same shearing, 1884, Greasy Bill, an Atwood and Robinson ram, gave 36 pounds 7 ounces, and five others exceeded 30 pounds, giving 32⅜, 33, 32, 31, and 31 pounds.

In 1885, at the shearing of the Saline Merino Breeders' Association, the heaviest ram fleece was 26 3/16 pounds, and the heaviest ewe fleece 21½ pounds. In Eaton County the heaviest ram fleece weighed 31¼ pounds, and the heaviest ewe fleece 15 pounds. In Clinton County the ram Greeley sheared 34½ pounds and Bismarck 31½ pounds.

The results of the fourth annual shearing of the State association is given in details, embracing weight of carcass, folds, quantity and color of oil in the fleece, density, covering, weight of fleece as clipped and as scoured, and the blood lines of the sheep.

Fourth annual shearing exhibition of the Michigan Merino Sheep-Breeders' Association, with cleansed record, held at Ann Arbor, Mich., April 15 and 16; Flint, Mich., April 20 and 21; Kalamazoo, Mich., April 22 and 23, 1886.

RECORD OF SHEARING AT ANN ARBOR.

Name of owner.	Name of breeder.	Sex.	Name of sheep.	Name of sire.	Description.																Blood lines.
					Age in years.	Constitution.	Form.	Weight of carcass.	Folds.	Quantity of oil.	Color of oil.	Fleece.			Covering.			Weight of fleece.		Cleansed weight.		
												Days' growth.	Length.	Density.	Head.	Belly.	Legs.					
																		Lbs.	*Oz.*	*Lbs.*	*Oz.*	
Wm. & E. N. Ball	Wm. Ball	Ram	W. Ball (389)	F. & L. E. Moore (512).	1	5	4	122	4	5	Buff	370	2½	4	4	4	4	17	7½	6	7½	Atwood & Robinson.
Do	do	Ram	W. Ball (391)	Star Bismarck, 504.	1	5	5	67½	3	4	Buff	390	2½	5	5	5	5	14	8	7	5	Do.
Wm. Ball	F. & L. E. Moore	Ram	F. & L. E. Moore (589).	Q. C. Rich (131)	2	5	4	88½	4	5	White	363	2½	5	4	5	5	21	1	8	11½	Rich & Robinson.
W. E. Boyden	Wm. Ball	Ram	W. Ball (397)	Star Bismarck, 504.	1	5	4	71	4	5	Buff	365	2½	5	4	5	5	17	0½	6	2	Atwood & Robinson.
C. R. Parsons	C. R. Parsons	Ram	C. R. Parsons (108)	M. S. Sheldon (48).	2	5	4	87½	4	4	Buff	355	2	4	4	5	5	20	8	7	15	Do.
T. V. Quackenbush	T. V. Quackenbush	Ram	Superior	do	2	5	5	127½	3	4	Buff	352	1½	4	5	4	5	22	4	7	3	Do.
A. T. Short	A. T. Short	Ram	A. T. Short (151)	Diamond, 814	3	5	4	129	5	5	Buff	372	2	5	4	4	4	29	8	9	5½	Do.
J. E. Smith	C. P. Crane	Ram	C. P. Crane (180)	Goldfinder	2	5	5	107½	5	4	Buff	368	2	5	4	5	5	28	14	10	3	Do.
C. M. Thornton	C. M. Thornton	Ram	Rowe	M. S. Sheldon (48).	3	5	5	148½	4	5	Buff	363	2½	5	5	4	4	30	6	11		Do.
A. A. Wood	A. A. Wood	Ram	A. A. Wood (190)	do	1	5	4	91½	4	5	Buff	385	2½	5	5	5	4	18	6½	9	5	Do.
F. C. Wood	F. C. Wood	Ram	F. C. Wood (305)	do	1	5	4	71½	4	4	Buff	397	2½	5	4	4	5	13	13	5	10	Do.
L. E. & N. A. Wood	A. T. Short	Ram	A. T. Short (175)	Diamond, 814	2	5	5	124½	4	5	Buff	372	2½	4	5	4	4	33	12	8		Do.
Wm. & E. N. Ball	W. Ball	Ewe	W. Ball (330)	J. T. & V. R., 478.	2	5	5	64½	5	5	Buff	352	2	5	5	5	3	17	9	7		Rich & Robinson.
W. E. Boyden	Wm. Ball	Ewe	W. Ball (318)	Star Bismarck, 504.	2	5	4	66½	3	4	Buff	352	2½	4	5	4	4	14	4	6	9½	Atwood & Robinson.
Do	W. E. Boyden	Ewe	W. E. B. (113)	Jay-Eye-See	1	5	4	54	4	4	Buff	395	2½	5	5	5	4	13	8	6	5	Do.
Do	F. & L. E. Moore	Ewe	F. & L. E. Moore (551).	Q. C. Rich (131)	3	4	4	68½	4	5	Buff	370	2	5	4	5	4	15	0½	7	6	Rich & Robinson.
S. R. Crittenden	S. R. Crittenden	Ewe	S. R. Crittenden (8)	M. S. Sheldon (48).	1	5	4	77	4	3	Buff	395	2½	4	4	5	4	16	10½	6	9½	Atwood & Robinson.
H. L. Doane	H. L. Doane	Ewe	H. L. Doane (127)	Wm. McCauley (49).	3	4	4	80½	4	4	Buff	358	2½	4	3	4	3	17	9	7	7	Stickney & Robinson.
Do	do	Ewe	H. L. Doane (148)	Wonder	2	5	4	79½	4	4	Buff	360	2	4	4	4	4	16	5	7	1	Do.
Do	do	Ewe	H. L. Doane (137)	do	2	5	4	68	5	4	Buff	372	2	4	4	5	4	19		9	5	Atwood & Robinson.
Wm. Duncan	W. Duncan	Ewe	W. Duncan (38)	A. A. Wood (147)	1	5	5	58	4	4	Buff	400	2½	4	5	5	5	14	7	5	11	Do.
W. J. Gage	D. P. Dewey	Ewe	D. P. Dewey (342)	Reliable, 285	3	5	5	72½	3	4	Buff	352	1½	5	5	3	4	15	11	6	14	Atwood.
Do	do	Ewe	D. P. Dewey (336)	do	3	5	4	65	4	4	Buff	350	2½	4	4	5	4	16		6	2	Do.

Do	do	Ewe	D. P. Dewey (340)	John L. Hayes, 439.	3	5	4	65	4	5	Buff	350	2½	4	4	4	4	17	5	6	9	Do.
R. W. Mills	R. W. Mills	Ewe	R. W. Mills (3)	M. S. Sheldon (48)	2	5	4	70½	5	5	Buff	360	2	4	5	5	5	22	8	6	4	Atwood & Robinson.
A. A. Wood	A. A. Wood	Ewe	A. A. Wood (238)	do	2	4	4	60	4	4	Buff	366	2½	5	4	4	4	16	8	6	0½	Do.
Do	L. G. Wooster	Ewe	L. G. Wooster (295)	Rip Van Winkle, 334.	5	4	4	104½	4	5	Buff	365	2	4	4	5	4	22	8	7	4	Atwood & Robinson.
Do	C. P. Crane	Ewe	C. P. Crane (304)	Goldfinder	2	5	4	73	4	4	Buff	362	2½	5	5	5	4	20	6	9	2	Do.
F. C. Wood	F. C. Wood	Ewe	F. C. Wood (173)	M. S. Sheldon (48)	3	5	4	87½	4	5	Buff	372	2	4	4	5	4	19	2	7	0½	Do.
Do	do	Ewe	F. C. Wood (258)	do	2	5	4	61½	3	4	Buff	378	2½	4	4	5	4	15	3	6	5½	Do.
I. E. Wood	do	Ewe	F. C. Wood (272)	do	1	5	4	67	3	4	Buff	402	2½	4	4	4	4	12	10	5	9½	Do.
N. A. Wood	N. A. Wood	Ewe	N. A. Wood (8)	do	2	5	4	69½	5	4	Buff	364	2	5	5	5	4	15	6	6	5	Do.

RECORD OF SHEARING AT FLINT.

L. W. & O. Barnes	L. W. & O. Barnes	Ram	L. W. & O. B. (101)	J. T. Stickney (307)	3	4	4	99½	4	5	Buff	360	1½	4	4	5	5	26	2½	8	12	Atwood & Stickney.
Do	do	Ram	L. W. & O. B. (42)	Monarch	3	5	5	100½	4	5	Buff	261	2½	5	5	4	5	22	15	9	6½	Atwood & Robinson.
Do	do	Ram	L. W. & O. B. (130)	Eclipse	1	4	4	67	4	4	Buff	345	2	5	4	4	5	14	12	5	15½	Do.
D. P. Dewey	E. Townsend	Ram	John L. Hayes, 439.	L. P. Clark, 207	8	5	4	127½	4	5	Buff	364	1½	4	4	4	5	25	10½	7	7	Atwood.
T. Dewey & Bros	G. W. Stewart	Ram	Col. Humphrey	do	4	4	4	127½	4	5	Buff	364	2½	5	4	5	4	28	9	8	13	Do.
H. R. Dewey	H. R. Dewey	Ram	H. R. Dewey (151)	John L. Hayes, 439	2	5	5	119½	5	5	Buff	364	2½	5	4	4	4	24	11	9	10	Do.
Do	do	Ram	H. R. Dewey (177)	Emperor	1	5	4	82½	5	5	Buff	370	2	5	4	5	4	16	13	6	9½	Do.
J. T. Rich	J. T. Rich	Ram	J. T. Rich (277)	H. G. Hibbard (48)	1	5	5	109½	4	4	Buff	388	2½	5	5	4	5	18	3½	8	0	Rich.
Stephens & Dewey	D. P. Dewey	Ram	Vanderbilt, (R. D. S. 20).	John L. Hayes, 439.	2	5	4	76	5	5	Buff	356	2½	5	5	5	5	22	9	9	2	Atwood.
J. H. Thompson	J. H. Thompson	Ram	J. H. Thompson (104).	Compact, jr	4	4	4	111	5	5	Buff	364	1½	4	4	4	4	32	8	8	6	Do.
L. W. & O. Barnes	L. W. & O. Barnes	Ewe	L. W. & O. B. (62)	Prince Bismarck	2	5	4	74½	4	4	Buff	362	2½	5	4	4	4	16	13	7	4	Atwood & Robinson.
D. P. Dewey	Poter Martin	Ewe	H. Martin (234)	Compact (121)	9	5	5	88½	5	5	Buff	364	1½	5	4	5	4	18	8	5	11	Atwood.
Do	H. R. Dewey	Ewe	H. R. Dewey (132)	John L. Hayes, 439	3	5	4	97½	5	4	Buff	363	2	4	4	4	4	18	2½	7	11	Do.
Do	D. P. Dewey	Ewe	D. P. Dewey (333)	do	3	5	4	85½	4	5	Buff	363	2	4	4	4	4	17	9½	5	12	Do.
Do	do	Ewe	D. P. Dewey (341)	do	3	5	5	90	5	5	Buff	364	2½	5	4	5	4	18	12	6	9	Do.
H. R. Dewey	H. R. Dewey	Ewe	H. R. Dewey (164)	do	2	5	4	79	5	5	Buff	363	2½	5	4	5	4	14	3½	5	9	Do.
J. T. Rich	J. T. Rich	Ewe	J. T. Rich (239)	H. G. Hibbard (48)	1	5	4	66	5	4	Buff	382	2½	5	5	5	5	12	10½	6	10½	Rich.
G. W. Stuart	E. D Hinds	Ewe	E. D. Hinds (2)	Moses, 337	6	5	5	99	4	4	Buff	359	2½	5	4	4	4	15	4½	6	5½	Atwood.
Do	G. W. Stuart	Ewe	G. W. Stuart (307)	L. P. Clark (143)	1	5	4	57½	4	4	Buff	375	2½	5	4	4	5	12	14	5	2½	Do.
Do	do	Ewe	G. W. Stuart (310)	do	1	5	4	54	3	4	Buff	390	2	5	4	4	4	13	2½	4	7	Do.
J. H. Thompson	J. H. Thompson	Ewe	J. H. Thompson (165).	L. P. Clark (207)	4	5	4	88	4	5	Buff	358	2	5	4	5	4	16	12	5	15	Do.

RECORD OF SHEARING AT KALAMAZOO.

E. Brackett, jr	E. Brackett, jr	Ram	E. Brackett (15)	S. B. Hammond (76)	4	5	4	102	4	4	Buff	345	2½	4	4	4	4	23	6½	8	6½	Atwood & Robinson.
R. Dougherty	R. Dougherty	Ram	R. Dougherty (306)	A. D. Taylor (443)	2	5	4	116	4	4	Buff	351	2½	4	4	4	5	21	14	8	2	Do.
Do	do	Ram	R. Dougherty (304)	do	2	5	4	132	4	5	Buff	351	1½	4	4	4	4	23	8½	8	1	Do.
H. A. Kinne	E. B. Welch	Ram	Rattler	G. F. Martin (190)	4	5	4	136	4	4	Buff		2	4	3	4	4	23	15½	8	7	Atwood.

Fourth annual shearing exhibition of the Michigan Merino Sheep-Breeders' Association, etc.—Continued.

RECORD OF SHEARING AT KALAMAZOO—Continued.

Name of owner.	Name of breeder.	Sex.	Name of sheep.	Name of sire.	Description.																	Blood lines.
					Age in years.	Constitution.	Form.	Weight of carcass.	Folds.	Quantity of oil.	Color of oil.	Fleece.			Covering.			Weight of fleece.		Cleaned weight.		
												Day's growth.	Length.	Density.	Head.	Belly.	Legs.					
																		Lbs.	Oz.	Lbs.	Oz.	
G. S. Pierson	Edgar Sandford	Ram	Messenger (E. Sandford 213).	Prince 2d	3	5	4	114½	5	5	Buff	378	1½	5	4	4	5	25	8	8	8	Atwood & Robinson.
Do	do	Ram	Prince 2d (E. S. 130).	Bismarck (307)	6	5	5	124	5	5	Buff	379	1½	5	3	5	4	27	13½	9	3	Do.
Putney Bros	S. B. Hammond	Ram	S. B. Hammond (220).	S. B. Hammond (141).	2	5	4	113	4	4	Buff	355	2½	5	5	4	5	21	4	8	6½	Do.
J. H. Skinner	A. T. Short	Ram	A. T. Short (156)	Diamond, 814	3	5	5	123	5	5	Buff	372	2	5	4	5	4	28	0½	9	7	Do.
E. B. Welch	E. B. Welch	Ram	F. B. Welch (21)	G. F. Martin (190)	4	5	5	132	5	5	Buff	378	2	4	4	4	4	27	11½	8	6½	Atwood.
E. Brackett, jr	E. Brackett, jr	Ewe	E. Brackett (31)	Gen. Dixon	2	5	4	57½	3	4	Buff	348	2½	5	5	4	4	15	1½	6	5	Atwood & Robinson.
W. J. Lawrence	W. J. Lawrence	Ewe	W. J. Lawrence(82)	D. P. Dewey (319)	2	5	4	75	4	5	Buff	365	2	5	5	5	4	24	12½	7	5½	Do.
Do	do	Ewe	W. J. Lawrence(83)	do	2	5	4	76	4	5	Buff	336	2½	5	5	5	4	18	10½	6	9½	Do.
Do	do	Ewe	W. J. Lawrence(88)	Extra	2	5	4	70	5	5	Buff	363	2	5	5	5	5	18	8½	6	12	Do.

The shearing at Saline for 1891 showed several rams that exceeded a fleece of 30 pounds and ewes that exceeded 18 pounds. The age, weight of sheep, weight of fleece, and length of staple are here given:

RAMS.

Age.	Weight of sheep.	Weight of fleece.	Length of staple.
	Pounds.	*Lbs. Oz.*	*Inches.*
Six years old	161	35	2½
Three years old	130	32	2½
Do	164	30	2½
Four years old	181	36 4	2
Three years old	163	32	2¼
Six years old	171	34	2½
Three years old	180	32	2

EWES.

Four years old	123	28	2¼
Six years old	105	24	2½
Four years old	102	20	2
Three years old	108	22	2½
Do	90	24 4	2
Two years old	105	20	1½
Do	92	20	2½
Three years old	106	22 8	2
Two years old	101	20	2½
Do	105	20	2½
One year old	98	20	2½
Two years old	86	19 4	2½
Three years old	96	19	2½

With the exception of three, all these fleeces were less than 365 days' growth, many of them were 364 days. Most of the sheep belonged to the Wood flocks, and N. A. Wood, in a communication to the Michigan Farmer, claimed that the shearing demonstrated that he had the "most heavy ewe fleeces of any flock in the United States of America." He cites the fact that few, if any, were more than a year's growth, and—

> The 62 sheared at the Saline public shearing were shorn there the last year one day later, so were less than a year. I have 22 that sheared 440 pounds; lightest 17½ pounds; heaviest, 28 pounds. Ten of these sheared 225 pounds; an average of 22½ pounds. The four heaviest were sheared at Saline, except one (she being heavy in lamb I could not take her) and cut 100¾ pounds, an average of 25 pounds 3 ounces. All but three of the 22 ewes have had lambs (mostly in March, 1891), and nearly all are raising their lambs. The three that I mentioned were 2-year-olds and have not bred.

The improvement of the Merino sheep in Michigan attests the adaptation of the soil, climate and herbage to them and the skill of the Michigan breeders. A comparison with the early Merinos of the country will show the improvement. In 1883 six fleeces of Michigan sheep (stock rams), whose average live weight was 117½ pounds, realized 49 $\frac{4}{16}$ pounds scoured wool, or an average of 8 $\frac{3}{16}$ pounds per fleece. The least was 7 pounds, the heaviest 9 pounds 2½ ounces. Compared with Chancellor Livingston's sheep about 1810, their unwashed fleeces averaged 7 $\frac{3}{16}$ pounds, the best one at fourteen months 9 $\frac{9}{16}$ pounds. The average live weight of the Livingston sheep was 125 pounds. The per cent of

scoured wool of the Michigan fleece was 7.5, or a larger per cent of scoured wool than was shorn of unwashed wool from the Livingston fleeces.

At the annual meeting of the Michigan Merino Sheep Breeders' Association in 1884, a new member from the north woods inquired the standard weight of a Merino sheep. His question was greeted with a general laugh, but no one attempted to answer it. At the next annual meeting the subject was discussed, but no two breeders had precisely the same opinion either as to weight, form, fleece, and general characteristics. One desired a very large, heavy boned, well covered, heavy shearing, plainly formed sheep. Another, a short-legged, heavy folded, short necked, thick fleeced, heavy shearing sheep. Still another preferred a sheep differing from either of those described. One breeder wanted in his flock a long fine fleece of white wool, and wethers that would bring the highest market price for mutton. Another cared more for weight of fleece and less for color, mutton, and other points. After some discussion two experienced breeders were designated who should severally present the ideal Michigan Merino ram and ewe at a future meeting. At the meeting in 1886 Mr. William Ball, who had been assigned to present the ideal Merino stock ram, said that in weight he should be from 140 to 160 pounds, in medium fleece, and that from considerable experience and long observation in carefully considering the produce of many flocks for a series of years in Vermont and elsewhere, he had found the best results to follow where rams of the above weight were used, other qualities being also good. In his judgment too many breeders were striving to secure large rams because the western demand seemed to be for such sheep. This was well enough for the West, where the sheep were bought and sold, but of doubtful expediency in the more eastern longitudes where thoroughbred Merinos were bred. The reason was found in the well-known law of sheep-breeding, that—

> Early maturity, easily fattening qualities, are produced by proper selections, careful handling, and generous feeding. It is also true that with this early growth and maturity, and easily fattening tendency, comes the converse, a tendency to premature decay; well enough in the mutton breeds of sheep, but extremely dangerous in breeding the long-lived Merino, which should shear a good heavy fleece of good wool and breed a lamb for a good many years in succession. One of the strongest traits of the Merino breed as it should be is its longevity, with the capability of procreation and wool-bearing, and if we would successfully perpetuate this noble animal we must not lose sight of the intention of its originators.

Changes to be lasting should necessarily be made slowly and with an idea of strengthening and perpetuating the good qualities of the Merino, rather than to satisfy or cater to the varying demands of fickle fashion and western trade. This is the description of Mr. Ball's ideal ram:

> The form of the ram should be such as would denote a good constitution and plenty of vigor. He should stand firmly and squarely on a good strong boned, well covered, shortish set of legs, well set apart both forward and behind. The body should be

neither very long nor very short, but between the two extremes. It should be broad and straight behind, well let down, with a broad tail, with good hip folds and a deep flank. His back should be broad, especially over the loins and short between the couplings. His chest deep and broad, his shoulders not too flat. His body should have plenty of folds, extending from the center of the belly (which should be covered with a thick, long staple of wool) to the middle of the body and still higher as they approach towards either end of the animal.

The fleece should be of even quality, strong, not coarse in fiber, and well set over the entire body, with a sufficient amount of oil to avoid anything like the appearance of dryness or harshness. Upon the body and shoulders of the above-described ram should be placed a short, deep neck, with heavy folds, and dewlap, covered with plenty of good wool, carrying and supporting a finely formed, heavily covered, masculine head. The horns should be of fine texture, of moderate size, good shape, and as near the head as safety and good looks would warrant. The ears should be thick, free from stain, of velvety touch and appearance, and well covered with wool. The nose should be short, thick, free from stain, and free from anything like coarse hair, especially that resembling the coarser breeds. In short, he should be so formed that he combines strength, longevity, vigor, masculinity, vitality and beauty. All of these traits should be prominent and easily discovered by the eye and the touch.

Mr. D. P. Dewey, in discussing the proper weight and form of the Merino ewe, observed that had the Merino but one mission to fill it would be easy to picture the required sheep, but the double purpose of wool and mutton in the same sheep made many differences of opinion. A breeder who made wool and its products his principal study and aim would differ widely from another who had given more thought to the development of mutton, or from another who had both about equally fortified in his ideal. When it was attempted to improve the size, form or mutton qualities of the Merinos, it could not be done by a resort to a ram of the mutton breeds, but dependence must be placed on the qualities already within the flock and the more generous feeding of the stock for several generations, as well as careful selections. After these general ideas, here much condensed, Mr. Dewey said:

For Michigan we want the ewes to average on the 1st day of January, in good breeding condition, 120 pounds; this will give us a range of from 100 as the smallest to 140 as the greatest weight, and from these we may produce rams for the market of from 130 to 180 pounds, and it would be well to reduce this range of sizes 10 pounds from either extreme, making them range from 140 to 170 pounds, if possible, within the flock, remembering that uniformity is a very desirable quality in a stud flock.

The form of a breeding ewe was more difficult to determine, but was very important, as involving that groundwork of all improvement—constitution.

First, the head should be in proportion to the body; if the body be long the head should also be of the same character, otherwise it will look disproportionate. The legs may be an inch or two longer or shorter than these measurements, but should be of sufficient length to take exercise freely. Head measurements: Draw a line on top of the head from ear to ear in front; this should measure 5½ inches; from this line to end of nose, 10 inches; width of nose, 3 inches. Body measurements: Height of ewe, 25 inches; whole length while standing in natural position, from nose to tail, 40 inches; from tail to brisket, 32 inches; length of fore legs from ground to

brisket, 10 inches. Fore legs, apart, inside, should be 3 inches. Width through the shoulders, 11 inches; width through the thighs, 11 inches; width from hip to hip, 11 inches.

These measurements taken with wool on, and wool 1¼ inches in length, with a body having the appearance of a straight line underside from foreleg to flank, with the folds and covering so often described, will give you a model American Merino of 130 pounds weight. A good wrinkle or two running across the nose, about 2 inches from the end, and those wrinkles running along the lower part of jaw, called cheek pieces, well wooled over, with solid blocky cap of wool an inch or two below the eyes and not too close to the same, but running out on the ear an inch or so, with a wide, thick ear, will finish up the head in good shape. The neck folds should be heavy, especially after leaving the head, as they come nearer the shoulder, and if they extend around the neck unbroken it is better than broken ones. It is not necessary to have many folds on the body, especially on the back and sides, but two back of the forelegs and two front of the hind legs, with good flank and folds extending up thigh to the setting on of the tail are almost indispensable, as well as those underside, especially one running lengthwise underside from udder to center of body, or, better, to the folds on either side of the brisket. You seldom meet with a sheep having this fold which will not shear off a good belly fleece. Then with a fold or two running around the tail, or on each side of it, you have the body finished off.

The depression in the wool market after the tariff revision of 1883 was felt in Michigan, but not so severely as in some other States, and the enthusiastic breeders of that State did not as a general thing sit down and repine and sacrifice their Merino flocks, but they culled and improved them, and some who were favorably situated increased them. There was, on the whole, a reduction in the fine-wooled flocks which was nearly compensated for in the increase of English breeds of sheep. The immediate effect of the depression was to open the eyes of the breeder to the kind of sheep he had been raising, and to set him to thinking how he could improve his Merinos to meet a more general demand than that for the wool alone. His conclusion was generally to the effect that what was wanted was a larger, plainer sheep than he had been raising; ewes weighing from 100 to 120 pounds, and rams from 150 to 180 pounds, carrying less oil and wrinkle. Up to 1876 the bulk of the Merino trade was within the State, and all bred the style of sheep then in demand, a sheep of medium size, weighing from 100 to 125 pounds, heavily folded from the tip of the nose to the end of the hoof, the main thing to be desired in the fleece being the amount of oil. The best sheep of those days were so heavily wrinkled that it was almost impossible for a ewe to nurse her lamb, or, as expressed by Mr. A. A. Wood, "for a ram to do service without the aid of two men and a platform." These heavily folded, short-legged, greasy, heavy-shearing sheep found favor with the best breeders, and were immediately the most successful prize winners at the fairs. At the annual meeting of the Michigan Sheep-Breeders' and Wool-Growers' Association, held at Lansing in 1886, Mr. A. A. Wood said substantially that while none could deny that these wrinkly, greasy sheep had done a vast amount of good to the flocks of Michigan, and when the people wanted them the breeders were all glad to furnish them, the question then presented itself whether they had not gone far enough in that direction.

While these small sheep had done well enough in the small flocks of Michigan, where they were housed and well cared for, whenever they were used in the large flocks of the West, they almost invariably proved "a miserable failure, their heavy necks and fleeces preventing them from keeping up with the flock when turned on the range to graze, and rendering it almost impossible for them to do service; consequently they have failed to give satisfaction to their purchasers, who do not care to buy the same style of sheep again at any price."

The conclusion at which Mr. Wood arrived was that while the wrinkly, heavy sheep which the Michigan breeders had been growing for ten years and more, had undeniably added many pounds to the annual wool clip of the State, they had done almost nothing toward improving the sheep as far as mutton was concerned. In the raising of sheep it must be admitted that those sheep are most profitable that give the greatest amount of wool and mutton combined, not wool alone, for in those large wool-growing States evidently the best markets for the Michigan Merino mutton was quite as important a consideration as the wool, and as the price of wool declined the price of mutton had advanced. From the experience of recent years it was apparent that the Michigan breeders would be compelled, like the breeders of Vermont, to look to the West for a market for their surplus stock instead of depending upon their own State for a market. It was certain that for many reasons they could not compete with the West in raising sheep simply for wool and mutton, and as the State grew older and the cities larger the demand for dairy and garden products at good prices would call for the use of a considerable portion of the land devoted to sheep husbandry, and there would be a necessity for finding a market for Michigan sheep in those States where the raising of wool and muttom would always be one of the main industries. This had already been realized to a certain extent, but it is only within recent years that the best breeders have been obliged to sell their rams to the dealers of the West and Southwest. Many look upon this business as already overdone, and an eminent breeder said, in 1886, that even in the West the Merino ram trade was "played out." Every man breeding Merino sheep saved all his rams to sell, to go West, until the United States was running over with them and they were almost worthless, and could be bought by the hundred thousand for $1.50 each. Nearly every breeder had from 10 to 100 to sell for about half as much as wethers were worth.

Under these circumstances it seemed clear to the leading breeders of Merino sheep that, as they were compelled or would be compelled to rely upon a market where wool and mutton combined shaped the industry, it was the best policy to breed for that market, and that it was advisable in selecting breeding stock, both sires and dams, to choose only those that were large and strong, with a vigorous constitution, and to discard from the flocks those little, greasy, wrinkly ewes and rams for the produce of which they could find no market.

These views were generally shared by a majority of the wool-growers, and at the meeting of the Southwestern Michigan Breeders' Association in 1887 the large, smooth sheep, with long bright wool, were commended. Sheep which sheared from 16 to 20 pounds to the fleece, with a 2½ to 3-inch staple of fine, lustrous wool, seemed to be the ideal. The next demand was that the sheep be of a good size, for many of the flocks began to run small and lambs were difficult to raise. The demand for coarse or middle wool rams was believed to be born of the faulty breeding of the Merino, which had been bred solely for wool to the entire neglect of its capacity for mutton.

The Michigan breeder of Merino sheep is strong in his conviction that there exists no breed of sheep that, for wool and mutton combined, for the general farmer, is so profitable as that sheep when bred and fed for those purposes. He will tell you that all that is necessary is to pay less attention to fleece, to discard wrinkles and oil and breed for the mutton qualities, and he can point to many instances where this course has been pursued with much profit. This can be done by using a large, plain Merino ram, having the lambs come in March, giving good feed, using the knife on ram lambs, and producing by the 1st of April in the following year lambs weighing 100 pounds, selling at $6 per head. "Keeping the largest and best of the ewe lambs for breeders, it would not take many years to increase the size and mutton qualities to such a degree as to astonish the natives and surprise the breeders of the coarse-wooled breeds." This is the language of the president of the Michigan Merino Association in 1888, and he said, in addition:

> Unless some event shall occur which we can not now foresee, the time, in my opinion, is not far off when the majority of our Merino flocks, through discouragement and lack of care in keeping and breeding, will cease to be worthy of the name. Already a large number have dropped out of the register, which argues a want of confidence in the future. Neglect them for two or three years and they will, for all practical purposes, be grades. Let us call a halt and change our hand a little. If we can not compete with other lands in raising wool we can in mutton; but there is no need to go outside of the Merino for that change. No man can do a more foolish thing than to cross with what is called the mutton breeds. Your first cross will do well enough to sell as lambs, but you gain nothing even then. A large Merino lamb will give as good, if not better, results with same care and less feed, while you can improve your breeding stock at the same time. In the other case you raise three or four crops of lambs and sell them off, so you have nothing to breed from.
>
> Uniformity of breeding in certain lines and for certain purposes is absolutely necessary to secure uniform results, and therefore success. That mutton will continue to grow in favor with the American people is proven by the increasing demand and increasing consumption of this easily-digested and most healthful of meats, while the cost of production per pound is even less than that of beef or pork.
>
> Another reason why producing mutton will pay is that there is no other means within reach by which we can keep up and increase the fertility of our farms so easily and so effectually as by keeping all the sheep we can keep well, for the better we feed them the more valuable the fertilizers produced by them. This will apply to all kinds of stock as well.

Before the action of the breeders' association there had been efforts

by breeders of the Merino sheep towards the mutton type which have been crowned with a fair degree of success, especially as to size, feeding qualities, early maturity and mutton forms, and the indications were promising that wethers could be produced equaling the Southdown in form, weighing 150 to 175 pounds at 2 years, covered with fleeces 3½ to 4½ inches long, cleaning 8 pounds of wool.

Looking to a Merino sheep of this kind, some breeders and farmers have turned their attention to the Delaine sheep of eastern Ohio and western Pennsylvania, and many of these have been introduced into the State. There are others who look to the French Merinos, which have the most enthusiastic admirers who are pushing the breed into prominence from the long obscurity in which it has lain.

When the French Merinos were introduced into the United States, from 1840 to 1860, the rams, distributed mostly in Vermont, New York, and Michigan, were used to cross on the Spanish Merino flocks to increase the size, vigor, and constitution of the latter.

So far as attaining the object desired it was entirely satisfactory, but, though greatly increasing the bulk of fleece and enhancing the value of the product for the manufacturer, it lessened the weight of fleece, especially on the short-wooled Merinos, that were so abundantly supplied with yolk as to form a black crust on the surface of the wool. A strife sprung up among some breeders to produce the greatest possible weight of fleece in proportion to the weight of carcass, regardless of the proportion of scoured wool to the raw material. This not being the end sought by the sheep-breeders in France, the different methods did not work in harmony. The breeders in France were steadily increasing the weight of carcass, bulk of fleece, and length and fineness of fiber with the least possible weight in scouring, while American breeders were seeking more the heaviest fleeces as the ultimate object, the weight of the animal not receiving so much attention. During the war of the rebellion—1861 to 1865—the price of wool rose to an extreme figure, and the breeders for weight of fleece only seemed to have produced the sheep most in demand, as buyers from first hands did not discriminate properly between the varieties of the different qualities of wool. As a natural result nearly all of the pure races of the French Merinos disappeared, as mutton was not considered an important factor in the breeding of Merino sheep, either during the war or the decade following.*

At one time there were many of the French Merinos in Michigan, but they generally disappeared when fashion set her stamp of approval on the Vermont type of the Spanish Merino. Among the purchasers from Mr. John D. Patterson, of New York, who was an extensive importer and breeder of them, was Mr. Stanton, of Oxford, Michigan, who kept his purchase absolutely pure. At Mr. Stanton's death the stock was purchased from the estate by Mr. S. Cooley, an enterprising and highly educated gentleman of Oakland County, who bred them with great care and selection and made a marked improvement in them. Hon. Henry Grinnell, of Oakland County, when traveling in France had his attention drawn to these sheep, and his admiration for them was formed by visiting the immense flocks of Australia, that were built up by crossing

*American Rambouillet Record.

with Rambouillet rams. He determined to engage in breeding these sheep, and on his return to Michigan purchased Mr. Cooley's entire flock at a price far exceeding the means of the average stockbreeder.

Mr. Grinnell has added to the original flock from time to time by several importations from France, and has spent much money and given much attention in producing a sheep that equals the meat-producing varieties in size and weight, and also produces the greatest quantity of wool, which is characterized by fineness, beautiful crimp, and unequaled length and strength. He has selected the foods necessary to their highest development, strength of constitution, and precocity, supplied them with an abundance of pure water, and produced ewes that shear from 6 to 10 pounds and rams from 12 to 24 pounds of wool, which, when scoured, gives 50 to 55 per cent from the raw material. The humid climate of Michigan seems particularly adapted to these sheep, and they are growing in favor. They are bred by a number of the most enterprising and wealthy sheepmen of the State, who, desiring to preserve the purity of the race and advance the interests of the breed, have organized the American Rambouillet Sheep Association and established a flock record.

The Rambouillet Association was organized in March, 1890, and the issue of the flock record published in 1891 carried the names of thirty-six breeders and 693 registered sheep. The record lays down these characteristics of Rambouillet sheep and their wool:

American Rambouillet sheep should have large frame, large, strong bone, well rounded and symmetrical bodies, well up on legs, bright pink skin, always plain and free from wrinkles. Broad head, bright eyes, quick movement, broad backs, and broad chests are indispensable. These sheep have long been noted as a mutton sheep, their fine, juicy flesh having no superior. They are noted for their early maturity and quick feeding properties, being fully equal to the Down breeds in this respect. The rams are usually well horned, but not always, and weigh at maturity from 175 to 250 pounds. The ewes are noted as good mothers, heavy milkers, one-half usually producing twins. They weigh 110 to 150 pounds; wethers attain 150 to 200 pounds. Being strong, vigorous, and healthy, their impressive power is very great, and they are not liable to constitutional breakdown in service. They will bear herding in large flocks, and their hardiness permits them to stand all kinds of weather without housing. Their fullness of carcass, brightness of look, length of body, vigor of carriage, and great strength make them excellent and reliable reproducers, and quick, healthy feeders on the range. The wool is of the finest quality, has a beautiful crimp, is usually white, sometimes of a buff color, very compact, opens in large layers, has just yolk enough to promote a rapid and vigorous growth, shows no crust formation, seldom any jar hairs, and is always noted for its length, strength, and elasticity. It is from 3 to 5 inches in length; often 6½ inches for one year's growth. Rambouillet sheep should be well wooled to the feet and to the nose. Rams shear annually from 12 to 24 pounds; ewes from 6 to 10 pounds. The wool scours 50 to 55 per cent for the manufacturer, and no other Merino wool shows so deep a staple.

Some shearing records for 1890 are given. The ram Ontario of H. Grinnell's flock, weighing 253 pounds, was shorn of 366 days' growth of wool, weighing 24 pounds 5 ounces, 5-inch staple. The ram Golden

Hoof, weighing 227 pounds, sheared 20 pounds 15 ounces, 5-inch staple. Ten full-grown ewes from the flock of L. B. Townsend weighed an average of 135 pounds and sheared an average of 8 pounds, 4-inch staple. A ram 300 days old weighed 128 pounds, sheared 11½ pounds, 4-inch staple, and scoured 54 per cent. Ten rams, one year old from H. Higby's flock, weighed 130 pounds, sheared 12 pounds each, 5-inch staple, while another flock produced 5 rams, one year old, weighing 135 pounds, and shearing 14 pounds each, 4¾-inch staple. Thomas Wyckoff had a yearling ram that weighed 176 pounds and sheared 15 pounds, 5-inch staple. Two ewes gave an average weight of 145 pounds and sheared 8 pounds washed wool, of 4½-inch staple. Four ewe lambs, one year old, weighed 110 pounds and sheared 8 pounds, 6-inch staple. The longest staple was 6½ inches, from a yearling ewe whose fleece scoured 55 per cent manufacturers' wool.

For those who wish to make comparison of the Rambouillet fold of France with the Rambouillet sheep of Michigan, the following tables are given from the American Rambouillet Record:

Comparison of wool of sheep of different ages.

[Rambouillet fold.]

Number and sex.	Young sheep.				Older sheep.			
	Age.	Length of staple.	Weight of sheep after shearing.	Weight of fleece.	Age.	Length of staple.	Weight of sheep after shearing.	Weight of fleece.
	Years.	*Inches.*	*Pounds.*	*Lbs. Oz.*	*Years.*	*Inches.*	*Pounds.*	*Lbs. Oz.*
1,169 rams	1½	3.00	150	14 0	4½	2.80	176	14 13
1,547 rams	1½	2.64	144	12 6	5½	2.72	184	15 0
110 rams	2½	3.20	166	14 0	4½	3.04	214	15 6
266 rams	1½	3.04	124	20 9	4½	2.64	200	18 2
62 ewes	1½	2.40	94	10 4	8½	2.20	96	14 1
133 ewes	1½	2.48	100	13 14	7½	2.32	100	12 3
515 ewes	1½	2.80	100	10 9	5½	2.12	102	13 4
1,317 ewes	2½	2.28	97	11 4	5½	2.20	100	10 0

Observations of Michigan Rambouillet sheep.

[Comparison of weights and wool of sheep of different ages, 1891.]

	Length of staple.	Day's growth.	Weight of sheep after shearing.	Weight of fleece.	Length of body.	Height.	Weight at birth.	Weight of lambs.
	Inches.		*Lbs. Oz.*	*Lbs. Oz.*	*Inches.*	*Inches.*	*Lbs. Oz.*	*Lbs. Oz.*
Group of mature rams	4.00	360	216 0	18 0	52.00	32.60	.....	.....
Group of 1-year-old rams	5.06	371	137 15	13 11	48.00	.....	.....	.....
Ram lambs, group 1	1.61	91	.....	.....	.....	.....	.....	.....
Ram lambs, group 2	2.00	115	.....	.....	37.75	27.80	12 0	37 14
Group of wethers	3.50	360	177 0	11 0	.....	.....	.....	61 2
Nurse ewes, group 1	4.50	360	120 5	9 10	48.60	28.75	.....	.....
Nurse ewes, group 2	4.00	330	127 11	8 4	48.50	27.00	.....	.....
Ewe lambs, group 1	1.42	71	.....	.....	.....	.....	.....	29 1
Ewe lambs, group 2	1.90	118	.....	.....	35.00	24.60	13 2	61 3

In addition to the French Merinos descended from importations made between 1840 and 1860, and more recent importations made from France,

there have been introduced into this country a number of the German Rambouillet sheep, a fine pair of which were presented by Baron Von Homeyer, of Pomerania, Prussia, to Messrs. Townsend, Grinnell, and Wyckoff, of Michigan, in 1890. They are of immense size and are considered marvels of beauty. An illustration of them is presented. How they will thrive in Michigan remains to be seen. In Texas these German Rambouillet rams have been used for a few years to cross upon common Merino ewes. Mr. Carl Goeth, of Cypress Mills, Tex., states that while he "and everybody is satisfied that this cross is the best we can use for mutton breeds, and the yearlings are as heavy as any older sheep in the flock, yet the lightness of the fleece is objected to." The heaviest fleece Mr. Goeth sheared from 7 Rambouillet rams he received from Germany weighed 19 pounds and the lightest 12½ pounds. To obtain heavier fleeces it was proposed to use Rambouillet rams with heavy fleeces and wrinkles, and Mr. Goeth was of the firm belief that the problem how to produce a heavy sheep with heavy fleece would be solved by using these wrinkled Rambouillet rams upon the cross of the smooth Rambouillet and common Merino ewes.

It was with much reluctance that some of the Michigan sheep-raisers and wool-growers abandoned fine-wool growing, gave up their pure-bred Merinos and turned their attention to the English breeds of mutton sheep, their cross on the Merinos and on each other. Wool had been so long the primary and almost wholly the object of sheep-raising that when the change was forced upon them it was like taking a fresh start and engaging in a new undertaking. This change took place about 1883, at which time less than 10 per cent of the sheep had English blood. Near the cities the Southdowns, Leicesters, and a few of other breeds were known and appreciated, but the Cotswolds were the general stand-by throughout the State as a strictly mutton sheep and to cross on the Merinos. These sheep were also crossed on the so-called common ewes and produced lambs which sold, after weaning, without feeding, for $4 to $5 per head. The Cotswolds have declined greatly in popularity and are exceeded in numbers by the Downs, but they still have some warm admirers. They have given way to the greater popularity of the Shropshires.

By those who believe that mutton should be the primary and wool the secondary consideration in sheep husbandry, or who seek a happy combination of both in the same sheep, the Shropshire is looked to as this double or all-purpose sheep. They are very prolific, producing often 140 to 150 per cent increase, and the lambs fatten readily at any age. The grades from common ewes shear fleeces of good wool, make large lambs, and yearlings of this class frequently weigh 200 pounds, though more generally 160 to 180 pounds. Pure Shropshire ewes from one to three years old weigh 160 to 250 pounds, according to condition, and mature rams from 175 to 300 pounds and over. They shear, according to care and generosity of feeding, fleeces weighing from 8 to 18

AMERICAN RAMBOUILLET RAM HUMBER, No. 328.

AFTER "AMERICAN RAMBOUILLET RECORD."

AMERICAN RAMBOUILLET RAM "GOLDEN HOOF."

AFTER AMERICAN RAMBOUILLET RECORD.

pounds of what is known in the market as medium wool, commanding a good price. The fleeces lose from 25 to 40 per cent in scouring.

Nine imported ewes, belonging to the flock of Mr. C. S. Bingham, of Vernon, were sheared April 19, 1888, and gave as follows:

Age.	Weight of carcass.	Days growth.	Fleece.
	Pounds.		*Lbs. ozs.*
Two years old	214	344	10 8
Do	120	358	10
Seven years old	209	370	9 13
Two years old	260	365	11 2
Do	248	381	14 4
One year old	156	365	12 10
Do	161	365	13
Do	130	365	10 3
Do	124	365	10 9

In 1891 L. S. Durham, of Concord, sent to the editor of the Breeders' Gazette, Chicago, specimen locks from two of his Shropshire yearlings—ram and ewe—and reported the weight of fleeces at 18¾ and 15½ pounds. The samples of wool were respectively 4 inches and 3½ inches long, were especially strong, even in fiber, and with "luster and crimp likely to meet the requirements of the most exacting consumers of Down wool fabrics."

These sheep are being imported into the country by thousands, and Michigan takes a good share of them. She has many enthusiastic admirers of them and they are filling the rich fields with their favorite sheep. It is claimed by them that the Shropshires will maintain their high standard of excellence under our American skies and climate as well as in England, and that "no breed yet presented to the world combines so many good qualities and so readily adapts itself to all the varied vicissitudes of mixed farming, when general adaptation to soil, climate, and markets are duly considered, as does this breed."

That they are prolific is attested by many reports. One farmer reported 52 lambs from 35 ewes, many of them weighing 40 pounds at 6 weeks old, and not one of them requiring extra nursing. Another reports 64 lambs from 38 ewes, weighing from 30 to 48 pounds at 6 weeks old, and still another 22 lambs from 13 ewes, one of which at 6 months old weighed 163 pounds.

Very few, if any, of the pure-bred Shropshires find their way to market as mutton. They are too valuable for that purpose and are kept for crossing on Merino ewes and other sheep to produce cross-bred lambs and mutton.

The cross of a Shropshire ram on a Merino ewe is a prolific one, and produces a heavy lamb. Thirty-six lambs from 25 ewes, 29 lambs from 21 ewes, and many other figures in that proportion are common. Mr. A. L. Richardson, of Parma, communicated to the Sheep-Breeder and Wool-Grower the weight of 3 grade lambs of this cross and their gain at different periods. They were dropped after the 4th of April, 1886,

weighed December 13, 1886, were turned on grass May 14, 1886, and were not fed grain until December 1, when corn and oats were given them. The weights at different periods were as follows:

	Pounds.
December 13—	
No. 1	119
No. 2	116
No. 3	113
Average	116
January 15, 1887—	
No. 1	128 (gain, 9 pounds.)
No. 2	121 (gain, 5 pounds.)
No. 3	122 (gain, 9 pounds.)
Average	123⅓
February 15, 1887—	
No. 1	144 (gain, 16 pounds.)
No. 2	140 (gain, 19 pounds.)
No. 3	139 (gain, 17 pounds.)
Average	141
March 15, 1887—	
No. 1	158 (gain, 14 pounds.)
No. 2	153 (gain, 13 pounds.)
No. 3	156 (gain, 17 pounds.)
Average	155⅔
April 22, 1887—	
No. 1	179 (gain, 21 pounds.)
No. 2	166 (gain, 13 pounds.)
No. 3	176 (gain, 20 pounds.)
Average	173¾

These three lambs were wethers, and they sheared 33¼ pounds of wool on May 1, 1887, when less than thirteen months old.

Those who raise these cross-bred lambs find no trouble in making them weigh 95 to 100 pounds by February, when dropped in May, and the farmers in Ionia County and elsewhere realize more money in handling them than by raising Merino lambs, as they are worth, from the time they are weaned to the first of February, from $2.50 to $6 per hundred. Over 5,000 of these lambs were fattened in Ionia County in one year and shipped to eastern markets. With few exceptions all the lambs in the southern and eastern part of the State in 1890 were of this class, and most of them averaged over 100 pounds and were disposed of at 6 cents per pound. L. S. Dunham, of Concord, states that 85 head of Shropshires sheared an average of 12 pounds of wool per head, and that his cross of the Shropshire ram on common fine-wool sheep produced lambs that weighed 125 pounds at ten months old, and sold for 6 cents per pound, live weight, on his farm.

Next to the Merinos the Shropshires now attract the greatest attention of the Michigan farmers. They have proven themselves hardy, prolific, and profitable, giving quick returns in lambs, and yielding a

wool that finds a ready and remunerative market. They are the most popular of all the Downs, and the prospect is that they will maintain that popularity.

For very early lambs—sometimes called hothouse lambs—the Shropshires are not equal to the Southdowns, and, consequently, in localities where the consumer is willing to pay a good price and there is a demand for choice early lambs, the Southdown maintains its position.

The Hampshire Downs are represented in the State by several fine breeding flocks, and in some localities are very popular. They were first generally known about 1883, and most of the flocks have been formed since that date. Mr. J. H. Taft, of Mendon, gives his experience with them, which began in the fall of 1884, by the purchase of a full-blood Hampshire Down ram lamb to cross on grade Merino ewes, which practice he has continued with success. At the time wool was low and sheep were a slow sale, hence the departure from the Merino. Having used fine-wooled rams from full-blood flocks he wanted a sheep that was in demand at paying prices. The first crop of lambs more than realized his expectations, being strong and growthy and finding ready sale when weaned. The following year he tried them as feeders, selling the last of February and obtaining an average of 126 pounds per head on his entire crop of 76 lambs. In the winter of 1887–'88 he fed 84 head of his own raising that averaged, after they were shorn, 113½ pounds per head in the early part of March. After his experience with the grade Hampshires he made an importation of Hampshire ewes that he considered the sheep for the average farmer. They were unusually large, averaged from 175 to 200 pounds, in fair flesh, and carried a compact fleece of wool. They were well suited to the climate and were hearty and inclined to lay on flesh.

The Oxford Downs have many admirers, and there are several breeding flocks in the State. One of these at Eau Claire produced ewes in 1887 that averaged 12½ pounds of wool per head on 354 days' growth, and a stock ram sheared 15 pounds. Crossed with a high-grade Merino ewe, the result is a large carcass and a heavy fleece, the average sheep thus produced weighing, at 1 year old, from 180 to 210 pounds.

The Lincolnshires are the largest sheep we have, and, in some instances, English breeders have forced them to a weight of nearly 400 pounds. They give a fleece weighing from 8 to 15 pounds of lustrous wool. They require too much care to suit the ordinary American farmer, hence are not popular. There are, however, a few flocks in Michigan and occasional importations are made from England. Messrs. G. S. Allen & Son, of Portland, have a flock that in December, 1888, averaged 209¾ pounds per head, and sheared 11⅛ pounds of unwashed wool in May following, at ten and a half months' growth. The cross of a Lincolnshire ram on Merino ewes got lambs that weighed at 6 months old 100 pounds and over, without giving ewe or lamb any extra feed. The Lincolnshire ram Iron Duke, owned by the Messrs. Allen & Son, weighed, when 4 years old, 352 pounds.

Lincolnshire yearling wethers, shipped to Buffalo by Michigan growers, have sold for Christmas sheep for the New York city market at $13.75 per head or $7.50 per hundred. While it is very profitable to sell the Lincoln lambs at $4 or $5 per head after weaning, it is found much more profitable to feed them for the winter market, as they take on flesh so readily.

The experience of a farmer with a flock of about 100 cross-bred Lincolnshire and Oxford Downs runs thus: His April lambs averaged in November not less than 110 pounds without any grain. They were then fed grain and at early shearing averaged 12 pounds of wool, which sold for 22 cents per pound. The sheep at that time averaged 140 pounds and some were sold at $4.50 each. Wethers and rams from the same flock were sold earlier than this in pairs or three at a time to the local butcher for 5 cents a pound after the wool was clipped. As these weighed about 200 pounds, the return was $10 each beside the wool, which would bring $2.50 additional.

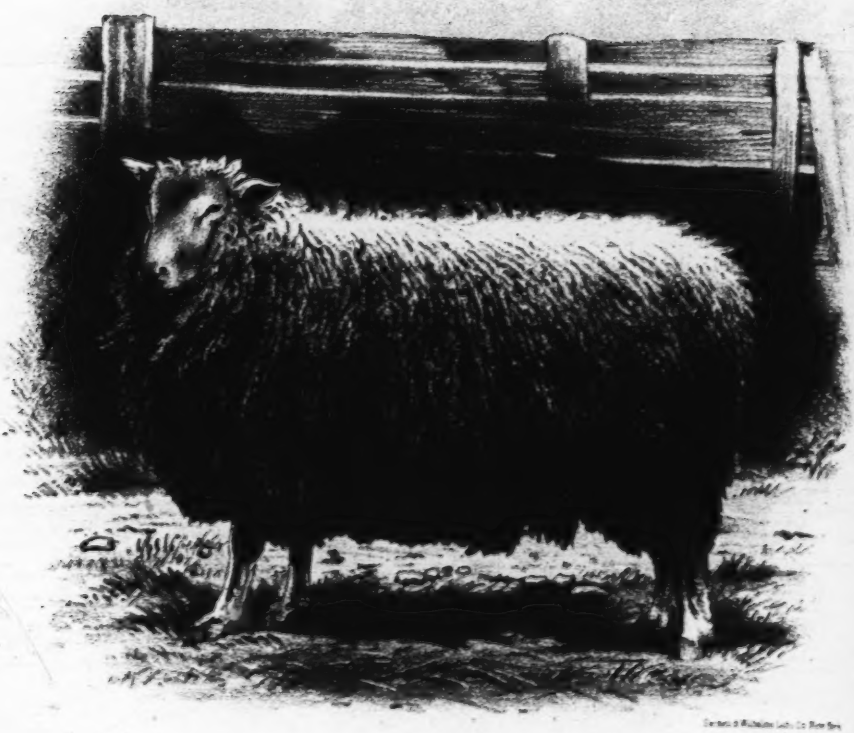
A cross of a Lincoln ram on a Shropshire ewe has been known to produce a 384-pound sheep—not yet in Michigan, however; but the fact is stated to show possibilities in that climate, which has proved so congenial to sheep of every kind and where the supply of food is so varied and abundant.

There are some Dorset Horns in Michigan, and they are beginning to attract some attention on account of their fecundity and value for early lambs. The Leicesters, once quite numerous in the State, are not now so well known, although some importations are yearly made, and the Cheviots are comparatively unknown and unnoticed.

The following statement shows the number of sheep in Michigan from 1840 to 1890. The number for 1890 is given by the U. S. Department of Agriculture; the amount of wool for 1890 is based upon estimates made by other parties. The figures from 1840 to 1880 are those returned by the United States census:

Year.	Number of sheep.	Wool.	Average weight of wool per head.
		Pounds.	*Pounds.*
1840	99,618	153,375	1.52
1850	746,435	2,043,283	2.73
1860	1,271,743	3,960,868	3.11
1870	1,985,906	8,726,145	4.39
1880	2,189,389	11,858,497	5.41
1890	2,240,841	12,989,226	5.75

Ohio is the only State east of the Mississippi River that exceeds Michigan in the number of sheep, and Michigan is the only State east of the Mississippi and north of the Ohio River whose sheep increased in number from 1880 to 1890. The raising of sheep is so ingrained in the life and training of the people that it is difficult for them to turn from it, and when one system does not pay they look to another. The sheep hus-



LINCOLN RAM.

bandry of the State is safe in the hands of its breeders of broad views, zeal, and industry.

The Michigan agent of the U. S. Department of Agriculture, in his report for January, 1891, states that sheep were then considered the best stock that a Michigan farmer could keep, and gives reasons:

> The price of lambs, fit for feeding, has, perhaps, more to do with the advance of sheep than the price of wool. For three years past the produce of our flocks has been sold for feeding or fed by the farmer himself. The result is a depreciation of the flock, which to some extent has been kept up by the purchase from other States. This year the ewe lambs only are saved. This will of course show an increase in the future. The mutton breeds are now the most popular.

WISCONSIN.

Sheep were not introduced into Wisconsin prior to 1837, as before this time wolves were so numerous and destructive as to discourage it. In that year some were taken from Illinois into Walworth County, and the census of 1840 returned but 3,462 in the entire Territory. The first introduction of the Merino blood was made in 1842. In that year Lewis Clark, of Genesee County, N. Y., arrived at Beloit, with 250 ewes, selected on account of form and hardiness, from a flock of about 800, raised by himself from two purchases of Spanish and Saxon Merino, the greater part being of the former. Mr. Clark began his farming operations in Genesee County, N. Y., and about 1828 commenced to improve a flock of native sheep by the use of Spanish rams. In 1835 he purchased 200 fine sheep, being one-half of what was known as the Carter flock of Spanish Merinos, of the Humphreys blood, then owned in Livingston County, N. Y. The year following he made another purchase in the same county of 100 full-blood Saxony sheep. There was at that time a fine-wool fever, and the rivalry between the Saxony and Spanish Merino exceedingly sharp. Mr. Clark used rams of both breeds, and increased the size of his sheep and weight of fleece. The rams used by him later were pure-blood Spanish Merinos from Vermont. The increase from his original flock went into southern Wisconsin and northern Illinois, and had some influence in the formation and character of the flocks in that section.

In 1843 David Brooks, of Livingston County, N. Y., and Curtis Hawley and Allen Rose, of Ontario County, prospected in northern Illinois and southern Wisconsin to find a good location for keeping sheep. The search resulted in the arrival of Mr. Brooks and Mr. Rose, at Troy, Walworth County, Wis., in August, 1844, with 1,000 ewes driven from western and central New York. The ewes were considered good ones, and were of the Spanish and Saxon blood, the result of crossing in two breeds. The flock was kept together in Troy for one year, and then let to different parties in Walworth and adjoining counties, and in northern Illinois.

In 1844 Mr. N. B. Clapp, of New York, enamored with the beauties of the far West, which he had visited the preceding year, determined

to take a flock of sheep to Wisconsin. He purchased in Dutchess County, N. Y., some hundreds of Spanish Merinos with a strong cross of Saxon blood, considered at the time as far better than the pure Spanish Merino and costing more money. He set out with the usual outfit of a pioneer—a pair of horses, a canvas-covered wagon, blankets, cooking utensils, etc., accompanied by two men and two shepherd dogs to care for the sheep. Through the State of New York more were added to his flock from time to time, as he could purchase to please him, of a coarse grade of sheep, until his flock numbered over 1,400. After leaving the State of New York pasturage cost nothing, his sheep feeding mostly on the roadside as they moved slowly along, avoiding the thickly-settled country and the towns. They arrived near Kenosha, Wis., in the fall, with no decrease in numbers and in good condition. The flock was kept together and pastured on the open prairie for some years until fencing shut them up, when they were disposed of and disseminated through the adjoining counties. All the rams used to cross on them were Spanish Merinos brought from the East. In a paper read before the Wisconsin Sheep-Breeders and Wool-Growers' Association in 1885, I. J. Clapp said that within the four years preceding he had seen some of the descendants of the same sheep that had characteristics of the Saxony remaining, although nothing but Spanish Merino rams had been used from the day that they were originally brought into the State.

In 1849 Mr. J. F. Brooks, son of David Brooks, took to East Troy about 500 Merinos, nearly all ewes, principally from the flocks of Leroy & Newbold, of Livingston County, N. Y. These sheep originally came from Vermont. For some years rams were brought from western New York to cross upon this flock, and the descendants and those from the flock of the elder Brooks gave character in a large degree to many of the flocks of good sheep so often met in after years in Walworth and the adjoining counties.

These first flocks were of mixed Saxony and Spanish Merino, and not until 1846 does it appear that any of the pure Spanish sheep were introduced into the State. In that year Mr. H. B. Burritt brought one ram and one ewe from the flock of Reed Burritt, his father, at Watkins, N. Y., to the town of Muskegon, Wis. In 1850 another ram and ewe, and in 1853 10 ewes more, were brought from the same flock, all pure-bred Spanish Merinos, descended from the original purchases made by Reed Burritt from Stephen Atwood, of Connecticut, and W. R. Sanford, of Vermont. In 1855 H. B. Burritt sold his flock to J. D. Buckett, of the same place, and in 1860 or 1861 5 ewes of the flock were sold to A. and P. Humbert, of Caldwell's Prairie, Wis., and were the foundation of the flock now owned by them.

In 1847 Steven Burrows, of Whitewater, received a pure-bred Spanish Merino ram and ewe from central New York, and Almon Atwood, of Waupun, made an importation from the flock of Edwin Hammond, Vermont. About the same time W. P. Benson, of Johnstown, brought in

a ram and a few ewes from the Merino flocks of Orwell and Shoreham, Vermont. C. M. Goodsell, of Geneva, was the first to introduce some very valuable sheep from the flock of S. W. Jewett, of Vermont; and Charles H. Smedley, of Hudson, imported a large number of rams and some ewes of the choicest breeds from Addison County, Vt., for which he found a ready sale. There were now many flocks both of the Merino grades and the common kind, and a general and earnest desire for improvement. Not alone were the farmers struck with the wool-growing character of the new country, but those having flocks in New York and Pennsylvania, tempted by the cheapness of land, drove their sheep thither.

In 1850, in the vicinity of Racine, there were many fine flocks of Saxony and other breeds. They were said to thrive well and were very healthy. In general the great mass of sheep were grades between the common and the Saxony and Spanish Merino. The grade sheep gave about 3¼ pounds of wool per head. There were a few pure Saxons and a few pure Spanish Merino flocks. One of the latter was that of Arnold Weeks, of Springfield. In 1850 Mr. Weeks sold 10 of the pure-bred Merinos which were brought from Vermont to C. K. Phelps. Those laid the foundation of a flock which ranks high in Wisconsin.

In 1853 there were some French Merinos in the State, and the Spanish Merinos were still being introduced, but not until 1855 to 1857 did any considerable number of the pure Merinos find their home in Wisconsin. Quite a proportion of the flocks recorded in the Wisconsin Merino register had their origin between 1860 and 1870. Two of earlier date may be noticed.

In 1857 Charles M. Clark, of Whitewater, commenced a flock by a purchase of ewes and lambs that had been bred by Ebenezer Porter from Atwood stock purchased of Ward M. Lincoln. The ewes were taken from Rutland, Vt., to Wisconsin, by Mr. Porter in 1856. The lambs were sired by Young Matchless, a ram bred by A. J. Wooster, West Cornwall, Vt., from a ewe purchased of Edwin Hammond and sired by one of their stock rams.

In 1811 William Pomeroy, of Rutland, Vt., bought of William Jarvis, on shipboard in Boston Harbor, some Spanish Merino ewes of the Negretti strain. In 1814 a Mr. Eastman bought of Mr. Pomeroy his ewe lambs, which he continued to breed in-and-in with a Negretti ram, except the cross of one ram, which he hired one year of William Jarvis, until 1829, when they were given into the hands of his two sons, when they purchased some Montarcos of J. Allen, imported originally by him October 20, 1810. From that time the two families were bred together. A part of this flock was taken to Wisconsin in 1863 or 1864 by L. Eastman, and bred until 1871, when the entire flock was sold to I. J. Clapp, Kenosha, Wis. It then sheared an average of nearly 14 pounds of wool, including a fleece of 17½ pounds from a yearling ewe. In 1858 Perry Craig, of Caldwell's Prairie, commenced a pure-blood

Merino flock by a purchase from B. J. Williams, of Whitewater, of 3 ewes from the flock of John D. Patterson, of Westfield, N. Y. The price for the 3 ewes was $100. At the same time he purchased from Mr. Williams a ram with one-seventh cross of French, but the stock proving unsatisfactory, the ram and his get were sold for store sheep. In 1864 he purchased of Paul Hastings, Geneva, 6 ewe lambs. Those ewes were all bred to pure-bred Spanish Merino rams. In 1870 the flock numbered 30 ewes. Subsequent additions were made by purchases from S. B. Lusk and P. H. McMillan, of New York.

Meanwhile some of the English breeds of sheep were introduced into the State, many from Canada, some from the older Western States, and a few from England direct. In 1845, T. J. Carmichael imported 3 rams and 6 ewes of the white-faced Cheviot breed for his farm at Lake Mills, Jefferson County. These sheep were large and very fine, the fleeces quite as heavy, and the wool nearly as long as the Leicester. The rams were bought of the flock of James Oliver, Bothwick Bray, and the ewes from that of Charles Scott, of Roxburghshire. In 1854 Capt. McKinnon imported from England about a dozen head of sheep of the most improved varieties. There were other importations made, but the great interest remained with the Spanish Merino.

The early importations of the grade Merino sheep and the pure-bloods proved so successful, they acclimated so readily, and cost so little to keep, that flocks were rapidly multiplied. Great pains were taken to improve them, for which the best rams were brought from New York and Vermont, and the business became a growing and profitable one. From 3,462 sheep in 1840 they increased to over 26,000 in 1844, and to 124,896 in 1850. Most of these were mixed breeds, but there were some flocks of full-bloods which were found profitable. The sheep brought from Vermont were found to increase in size at least one-third, while the wool increased equally in weight and quality.

A brief sketch of some of the breeding flocks established between 1860 and 1870 will be given. In view of the fact that the greater part of the flocks of pure Spanish Merinos in the State were commenced by the purchase of Vermont and New York bred sheep, it is unnecessary to give a detailed history of them; all that is essential is to make the connection, and the detailed history can be consulted in the chapters treating of the parent flocks.

In 1860 A. Jones, of Leeds Center, purchased of C. R. Jones, of Vermont, 50 ewes descended from the Jarvis and Humphreys importations through the flocks of J. Hinds, Lyman Webster, and Stephen Atwood. In 1863 he purchased of Mr. Jones 15 more of the same blood and rams of the Jarvis and Humphreys blood. He added to the flock, in 1873, 14 ewes from the flocks of Edwin Hammond and E. S. Stowell, of Vermont, and 2 rams from the Hammond flock.

Isaac Gale, of Waukesha, began the formation of a flock by the purchase of 10 ewes that had been brought from Vermont to New York in 1862. They were bred by the Merino flockmasters of Shoreham, Vt.

In 1862, 1863, and 1864 A. E. Perkins, of Mukwonago, purchased from the flocks of George Campbell and others, of Vermont, a large number of rams and 14 ewes. In 1875 he added to his flock 10 ewes and a ram from the flock of George Cleland, of Janesville, pure-bred American Merinos.

In 1863 B. J. Williams, of Whitewater, who had previous to this date been a breeder of Merino sheep, founded a new flock by a purchase of 20 ewes of J. H. Butterfield, of Lapeer, Mich., to whom they were transferred by William Stout, of Oakland County, in the same State, and by whom they had been purchased of E. B. Pottle, Ontario County, N. Y. Wisconsin rams were used on this purchase. The flock was increased in 1877 by the purchase of 15 ewes of G. A. Cutting, Vermont.

In 1864 George Cleland, of Janesville, laid the foundation of a noted flock by the purchase of 17 ewes of A. F. Knox, of Whitewater. These ewes were bred in Vermont. In 1867 2 ewes were purchased of J. H. Sprague, Waltham, Vt., bred from Hammond stock. The flock was added to by subsequent purchases of Vermont ewes and rams. In the same year O. Cook, of Whitewater, commenced a flock by a purchase of fine ewes of A. F. Knox, of same place. They where bred by T. Stickney & Son, and were of Atwood, Jarvis, and Cock blood. In the fall of 1867 3 ewes were purchased, bred by L. C. Remele, of Atwood, Jarvis, and Cock blood. In 1871 9 Vermont-bred ewes were added to the flock. The rams used in the flock combined the same blood as the ewes. T. W. Gault, of Waterford, also established a flock in 1864, by the purchase of 2 lambs bred by A. E. Perkins, of Mukwonago, Wis. In 1866 he purchased 5 ewe lambs from the same flock, and in 1867 10 ewes bred by Fayette Holmes, of Vermont. The best Vermont rams were used in the flock.

In 1866 J. H. Paul, of Genesee, purchased 12 ewes of Oliver Severance, of Vermont; a part of them were bred by Victor Wright. In the same year 2 ewes were purchased of J. E. Parker, 8 from other parties in Vermont, and 3 of Peter Martin, of New York. Additions were made to the flock by the purchase of 3 ewes in 1873, and 3 from each of the flocks of S. B. Lusk and E. Townsend, of New York, in 1876. H. H. Cobb, of Whitewater, commenced a flock in 1866 by the purchase of 15 ewes of Asaph Pratt, of Lima, Wis. These ewes and the ram used in the flock traced their origin to Vermont sheep, the former to the flock founded by Mr. Pomeroy in 1811, and the latter to Tyler Stickney's flock. Walter Irving, of North Prairie, also established a flock in 1866, by the purchase of 30 ewes from P. B. Stewart, of Eagle, Wis. These ewes came from Joseph Smith, of Wisconsin, and were from a flock of 66 ewes imported from Michigan about 1862, and sold for $1,300. Vermont rams were used on the flock.

In the fall of 1867 S. W. Andrew, of Juneau, established a flock by the purchase of 5 ewes and a ewe lamb of John Hawkins, of the same

place. These ewes were purchased in the spring of 1866 of C. A. Dodge, of Weybridge, Vt. The ewe lamb was bred from one of the ewes and sired by a Vermont ram. The rams bred to this flock were raised by J. S. Benedict and E. N. Bissell, of Vermont. In the same year George Baker, of Hustisford, originated a flock by the purchase of 1 ram and 10 pure-bred ewes of Abijah Granger, Newstead, Vt. Mr. Granger purchased these ewes in 1865 of Cassius M. Worls, of Vergennes, Vt. They were bred largely in the Atwood blood. The ram was said to have been sired by Young Gold Fleece, for which his owner paid $5,000.

In 1868 J. G. Putnam, of Neosho, founded a flock by the purchase of 6 pure-bred ewes of J. E. White, Springfield, Vt. These ewes were from the flock of James Lowell, and bred from the flock of Edwin Hammond. The same year he purchased of M. C. Roundy, of Rockingham, Vt., 3 Hammond ewes and an Atwood ram. Subsequent additions were made to the flock by further purchases of Vermont rams and ewes of the best blood.

There were many other breeding flocks founded between 1860 and 1870, but they have ceased to exist and have left no trace save in such fragmentary form as to defy satisfactory note of them.

From 1850 to 1860 the number of sheep more than doubled and the amount of wool quadrupled, rising from 253,963 pounds in the former year to 1,011,933 pounds in the latter. From 1860 to 1870 there was a still greater increase. In the ten years the number of sheep was trebled and the yield of wool quadrupled. Beyond the wool for domestic use the surplus was sent to Eastern markets, and there was shipped from 1860 to 1867 from Milwaukee a large amount.

Year.	Pounds.	Year.	Pounds.
1860	669,375	1864	1,993,372
1861	1,000,225	1865	2,277,850
1862	1,314,210	1866	1,597,487
1863	1,355,379	1867	2,085,006

Prior to 1855 there had been considerable discussion as to the establishment of woolen factories in the State. It was not considered true economy to send the wool from the farm to the East, there to be made into clothing and returned again to the farmer with the expense of transportation both ways and the added profit of the manufacturer. There was a disposition to build the factory near the farm, and though capital was scarce some factories were started, which in 1860 numbered sixteen, with a product of $167,600. The war made heavy demand for woolen goods, and by 1868 there were more than fifty factories, with a product of about $1,000,000. It is estimated that in 1868 Wisconsin had 2,000,000 sheep, valued at $4,000,000. This year witnessed a great revulsion in the business of wool-growing. The price of wool had been

falling since 1865 from 48 and 57 cents to 40 and 50, then to 38, 35, and in 1868 it fell to 30 and 32 cents. At first the farmer was surprised, then provoked, and finally disgusted to an extent that his first impulse was to sell out or slaughter and quit the business; and to such an extent was this first impulse carried that the clip of 1869 was 40 per cent short of that of 1868, and in 1870 there were 1,069,282 sheep only, where there had been 2,000,000 in 1868.

In 1865 there were some Silesian Merinos in the State, and the show of long-wool sheep at the State fair was unparalleled. The mutton sheep were increasing with great rapidity. The demand for coarse wool and the growing consumption of mutton encouraged this increase in the direction of better mutton and better wool. Thorough blood animals were brought from the East, and the finest English blood was grafted on the native or common sheep. The fine-wool sheep were also receiving more attention, and the Wisconsin wool-grower had every reason to believe that he could compete with, if not excel, Vermont and Michigan in breeding fine sheep. Sheep husbandry was admirably suited to the State, its undulating, and in some counties hilly, surface and pure dry atmosphere going far to insure the animal a sound constitution and comparative freedom from various diseases.

The revival of manufacturing in 1870–'72 stimulated wool-growing, and there was a slow increase in the number of sheep and a marked improvement in them and their wool. The woolen factories, with a capacity to consume over 2,000,000 pounds of wool if run on full time, were shut down part of the time, and in 1871 out of a total wool clip of 4,500,000 pounds consumed but a little more than one-third of it. Of this, 1,500,000 pounds were manufactured into cloth, yarn, etc., and 120,000 pounds made into rolls for custom work.

One of the largest wool-growers of the State at this time was Eli Stinson, of Oshkosh, who sheared in 1872 1,700 Merinos of 7,136 pounds of wool, which he sold at 56 cents per pound. Mr. Stinson for many years previous to this had kept from 1,000 to 2,000 Merinos, and said that for the eight years immediately preceding they had about paid expenses, leaving the manure as profit. He found that on land worth $50 per acre, with sheep at $2.50 and lambs at $2, they would pay expenses with 7 per cent interest on the investment, leaving the manure as profit.

In the ten years from 1870 to 1880 there was but a moderate increase in the number of sheep, rising from 1,069,282 in 1870 to 1,336,807 in 1880. The wool clip, however, increased largely, from 4,090,670 pounds in 1870 to 7,016,491 pounds in 1880. While the number of sheep had increased 25 per cent the wool clip had increased over 70 per cent. Some of this increase was due to the large number of coarse heavy wooled English sheep introduced into the State during this period, but more was due to the great improvement upon the Merino and its grades. As a rule the Wisconsin breeders did not lay claim to the fact that they raised the

heaviest shearing, nor did they contend that the heaviest sheep were the best. Their aim was for fair size in the sheep and resistance and quality of wool, with a fair length of staple. One of the prominent breeders said in 1876:

> We have searched and looked Vermont, New York, and Illinois over, examining sheep, and besides have purchased the very best we could find, both rams and ewes paying high prices and taking them to Wisconsin. Thus you see the base of our breeding from these different States. While much credit is justly due Vermont, yet we assert from experience, that the second or third generation from Vermont, grown in Wisconsin, are a superior sheep for general purposes. They have a larger carcass, heavier bones, quantity and quality of fleece equal if not superior. They also withstand more hardship and exposure than Vermont stock.

The earliest record that we have of the weight of the Wisconsin Merino fleeces is May 29, 1854, when a shearing took place at Whitewater of about 120 sheep. The sheep were washed one or two weeks before the shearing and some of the fleeces yielded as follows:

	Pounds.
Ten Spanish Merino fleeces, 10½ months old	52 1/16
Ten Spanish Merino fleeces, 10½ months old	55 5/16
Ten Spanish Merino fleeces, 11½ months old	57 1/4

These were from 2-year-old ewes, and gave an average of 5½ pounds each. Six rams, 2 to 4 years old, gave 70 pounds, an average of 11 pounds. The heaviest ram fleece was 14 pounds 2½ ounces, from a 3-year-old ram.

In 1861 Alvin Thomas, of Ripon, sheared 2 Spanish Merino rams an average of 14½ pounds of wool each; 5 yearling rams of 9 5/16 pounds each, and 51 ewes of 6⅛ pounds each; all the wool well washed on the sheep's back. In June, 1863, Mr. Thomas sheared 22½ pounds unwashed wool from a 3-year-old ram.

In 1865 at the second shearing held at Whitewater, the average of 6 ram fleeces was 16 5/16 pounds. The heaviest fleece was 18 7/16 pounds from a 3-year-old ram. A yearling ram gave 14 13/16 pounds and a yearling ewe 11 pounds. At Ripon, in May, 1867, 5 rams gave fleeces averaging 17 3/16 pounds each. The heaviest weighed 20 1/8 pounds, from a 3-year-old ram. A 2-year-old ewe gave 13 3/16 pounds.

In 1874 the Merino breeders of Waukesha County had a shearing at Caldwell's Prairie, where 201 sheep were exhibited. Fifty of these were sheared, the ram fleeces running from 10½ pounds to 19 3/16 pounds, the ewe fleeces from 9⅞ pounds to 19¼ pounds. In the same year J. P. Paul, of Genesee, sheared a 2-year-old ram of 24 pounds. In 1875 Mr. Paul's flock sheared at the average weight of 15 1/16 pounds for ewes and 21½ pounds for rams. The flock of G. Lawrence averaged 14 pounds for ewes, 19¼ pounds for old rams, and 15 5/16 pounds for yearlings. The heaviest ram fleece was 28½ pounds; the heaviest ewe fleece 18 pounds. Paul's heaviest ram fleece was 26¼ pounds, the heaviest ewe fleece 17 pounds.

In 1875 9 ram fleeces sheared at the Wisconsin State Fair were scoured. The result is given in this table:

	Weight of carcass.	Weight of fleece.	Scoured wool.	Loss.
	Pounds.	*Pounds.*	*Lbs. Oz.*	*Per cent.*
Three-year-old ram	133	24	5 5	77.86
Two-year-old ram	107½	21¾	6 1	72.12
Do	126	17	5 12	66.17
Do	125½	22	6 12	69.31
Do	127	19¼	6 7	67.26
Four-year-old ram	148½	21¼	7 5	65.59
Two-year-old ram	82	12	4 13	59.37
Three-year-old ram	114	21	4 15	76.48
Do	125½	19½	6 5	67.66

At a sheep-shearing at Winnebago, in 1878, 13 rams yielded 282½ pounds of wool, an average of 21$\frac{9}{13}$ pounds each. The four heaviest fleeces, with the live weight of the rams, were:

	Live weight.	Fleece.
	Pounds.	*Pounds.*
Four years old	186	30½
Do	149	27½
Three years old	164	27½
Four years old	115½	23½

At the annual shearing in 1880 7 ram fleeces exceeded 20 pounds, as follows: 20$\frac{12}{16}$ pounds, 20$\frac{13}{16}$ pounds, 21$\frac{13}{16}$ pounds, 22$\frac{1}{16}$ pounds, 22$\frac{6}{16}$ pounds, 24 pounds, and 24¼ pounds, while 12 1 and 2 year old ewes gave an average of 12$\frac{13}{16}$ pounds, the heaviest fleece being 17$\frac{9}{16}$ pounds.

In 1881 the heaviest fleece was 26 pounds from a 2-year-old ram. Yearling rams averaged 11$\frac{7}{16}$ pounds each. The weight of carcass and fleece and the proportion of fleece to carcass for a part of the shearing of 1881 are given in the following table:

	Weight of carcass.	Weight of fleece.	Proportion of fleece to carcass.
	Lbs. Oz.	*Lbs. Oz.*	
Ram 1 year old	31 4	8 12	1 to 3¾
Do	69 8	10 10½	
Do	72 8	11 14	
Ram 2 years old	74 8	17 12¼	
Ram 3 years old	90	18 7	
Ewes 1 year old	41 12	10 11½	1 to 3$\frac{8}{16}$
Do	43 4	8 10½	1 to 5
Do	37 6	9 3½	1 to 4$\frac{1}{16}$
Do	42	9 2	1 to 4$\frac{8}{16}$
Ewes 2 years old	44 4	12 4	1 to 3$\frac{8}{16}$
Do	61	14 9½	1 to 4¼
Do	62 8	15 2½	1 to 4⅛
Do	64 8	13 8½	1 to 4¾
Do	56 12	14 15	1 to 3¾
Do	62 8	15 2½	1 to 4⅛

The tariff of 1867 was looked upon by the Wisconsin wool-growers and sheep-breeders as an equitable adjustment between the wool-growers and manufacturers on the one hand and the Government on the other. Its revision by the act of 1883 was considered as deeply prejudicial to their interests, so much so as to threaten seriously the permanence of the wool-

growing industry of the State. There was a tendency and strong temptation to greatly reduce, if not entirely abandon, sheep husbandry. The low prices of wool, consequent on the general commercial depression and the reduction of the tariff, greatly reduced the profit of sheep-raising, and many claimed to have realized no profits. Many flocks were sold and many more were neglected and allowed to run down in condition. Flock-masters tried to lessen expenses by short rations of grain and hay, and failed to breed from first-class sires. The consequence was in many cases a lower grade of sheep and a fleece diminished in quantity and of inferior quality. Occasionally a flock-master pursued the opposite course, and by generous and systematic feeding and good management secured good profits in increased yield of wool and in lambs and mutton. It was in Wisconsin, as elsewhere, the slovenly and careless wool-grower was the chief sufferer in the low price of wool; to the careful and intelligent grower a full measure of success was assured, such as to justify these remarks of the president of the Wisconsin Wool-growers' Association in 1887:

> A little careful investigation is pretty sure to lead to the conclusion that sheep husbandry, intelligently and systematically conducted, making use of all that modern experience has taught of the science of feeding, and of skill in breeding, all things considered, will return in profits for capital employed and labor performed, as much as most, if not any other branch of agricultural industry.

There were many, however, who thought differently, and believing that the days of profitable sheep husbandry were of the past abandoned the flocks for cows, hogs, and horses. Butter, cheese, and hogs could be sold for cash at all times. From these they could obtain quicker returns than they ever received from their wool clip. The old system of sheep husbandry did not take any account of mutton; in fact, no large amount of attention was ever paid to it. But when it was found that wool-growing alone was not profitable, with land at $50 to $75 per acre and wool lower than 40 cents, suggestions of a change were heeded. But parties were not numerous who were disposed to change the Spanish Merinos for other breeds. The possibilities of the Merino as a mutton sheep received much consideration, and prominent breeders leaned directly and decidedly to a plainer Merino than the wrinkly Vermont one upon which most of their flocks were founded, a Merino that would take on more fat inside his pelt than on it, and that would produce a delaine wool which was always salable at a good price. Speaking of breeding the Vermont wrinkly sheep, Seymour Brook said, in 1884:

> It is time to call a halt in that direction, and strive to produce a carcass that will not shuck around in its skin loosely, but one that will fill out plump and smooth, and have this fatty substance, which now goes into what is called a soggy fleece, directed to building up a larger carcass. The time has passed when we can dispose of the foreign properties in wool at a price exceeding its cost.

Others counseled in the same direction, and endeavored to lead flock-masters to see and believe that if they would do all they could to

increase weight of carcass and amount of wool in fleece, of the best quality, and take all advantage possible of modern science in feeding, so that production from the same farm might be greatly enlarged, the profits would compare favorably with other branches of legitimate farming, all things considered. This direction has been taken by the larger number of farmers, and the Wisconsin Merino of to-day is being bred and fed with a view to secure both wool and mutton, for which the numerous flocks give ample facilities without any in-breeding or importation from other States.

Notwithstanding the efforts of the leading breeders, there was a stampede in the Merino flocks and many swelled the receipts of the Chicago markets. There seemed to be a disposition all over the Northwest to abandon them, and they diminished at a rapid rate in Wisconsin—so rapidly as to call from one of the leading live-stock journals of Chicago the remark that "farmers vie with each other to see who can run away from their flocks the fastest or reduce them some way." From 1884 to 1887 the growers held on well, but hope seemed to have fled in the latter year, and the number of sheep in the State dropped from 1,218,800 in 1886 to 809,009 in 1890, and the loss was entirely in Merino sheep.

There came about in this interval from 1884 to 1890 a great change in the sheep husbandry of the State—such a change as occurred at the same time in Michigan, and produced by similar causes. It was found that breeding sheep for wool alone would not pay, and that too little attention had been given to the production of mutton, at least that quality of mutton that would command attention in the market. Those who continued to breed for wool now gave some thought to the possibilities of a mutton Merino. The direction of the thought is well told by a correspondent of the National Live Stock Journal, Chicago, April, 1888:

My flock consists of good high-grade Spanish Merinos. It averaged 8 pounds of fleece-washed wool last season, which sold for 32 cents per pound. Undesirable ewes and wethers of feeding age are put in good condition for the shambles and sell readily. I am doing about as well as other farmers now, all thing considered, I think, but believe that something further may be gained by giving the question of breeding and feeding more consideration. Hitherto, like others, I have bred mainly for weight of fleece. I know of no good reason why, and certainly it has not yet been proven, that we can not have a large fleece of desirable Merino wool on a carcass 50 per cent heavier than we now have, though lacking, perhaps, the excessive folds on the body and amount of yolk in the fleece. I am going to turn my attention in each direction and see what I can do. Such a carcass will be valuable for the production of mutton as well as wool, as I am satisfied that, properly fattened, the quality will be entirely satisfactory. I do not expect to raise early lambs for market, but shall produce mature mutton. All the talk about the economy of feeding will apply as well to sheep as to other stock, and I shall try to take advantage of all that may recommend itself in that direction.

Still others, who were disinclined to abandon the Merino, sought a different type from that generally bred in Wisconsin, and experimented with the Delaine Merino of western Pennsylvania and eastern Ohio. The experiments have resulted favorably, although they have not been extended over much time. One must suffice here. A breeder

of thirty years' experience purchased a 2-year-old Delaine Merino ram, and raised from him and his ordinary Merino ewes 60 lambs. The lambs were pastured in a flock of 200 on rather short pasture until September 1, when they were weaned and put by themselves in a stubble field. December 1 they were taken up and penned with other 2-year-olds and rams, about 100 in all, and were fed during the winter one-half bushel of oats per day, and clover and timothy hay mixed. They looked fair, and the wool upon opening was nice. The 60 lambs were sheared in June, and averaged 11 pounds per head of nice clean wool, the lightest fleece weighing 7 pounds. They ran up to 15 pounds, generally going 10, 11, 12, and 13 pounds each. None of them were rams, but all ewes and wethers.

During the same period, 1884 to 1890, there was increased attention given to English breeds of sheep, before considering which it is desirable to record the increasing weight of the Merino fleece.

At the annual shearing at Whitewater, May 2, 1882, under the auspices of the Wisconsin Merino Sheep-Breeders' Association, 55 sheep were shorn, the heaviest fleece being 28⅜ pounds from a 3-year-old ram whose weight of carcass was 100 pounds, the weight of fleece in proportion to carcass being 25.55. The heaviest ewe fleece was 17$\frac{15}{16}$ pounds from a ewe weighing 83½ pounds, the percentage of fleece to carcass being 21.48. The highest per cent of fleece to carcass was from a 2-year-old ewe weighing 59 pounds, and giving 16½ pounds of wool or 28 per cent.

In 1886 twelve 3-year-old rams averaged 22 pounds and a little over 4 ounces; seven 2-year-old rams a little over 20¾ pounds, and the two yearling rams 14¾ pounds each. Seven 3-year-old ewes averaged 17 pounds and 3 ounces, and seven 2-year-old ewes a trifle less than 17 pounds 2 ounces.

At the southeastern Wisconsin shearing of May 12, 1886, the Merinos were divided into two classes, the American Merino and the Delaine Merino, and premiums awarded as follows:

Class 1.—American Merinos.

Sex.	Age.	Weight of carcass.	Weight of fleece.
	Years.	*Pounds.*	*Pounds.*
Ram	3	100	22
Do	2	105	19¼
Do	1	77	12¼
Ewe	3	122	17¾
Do	2	99	24¼
Do	1	46	12

Class 2.—Delaine Merinos.

Ram	2	125	21¾
Do	2	100	20¼
Do	1	77	12¾
Do	1	64	14
Ewe	3	100	11
Do	1	60	10¾

The fleece shorn from the 2-year-old ewe in class 1, weighing 24½ pounds, was the heaviest ewe fleece ever known up to that time in the Northwest.

At the Central Wisconsin Sheep-Breeders' Association shearing of 1887, 5 rams 2 years old and over gave fleeces weighing 31 5/16, 29, 28 3/16, 28 1/16, and 32 1/16 pounds.

At the eighth annual shearing of the Central Wisconsin Sheep-Breeders' and Wool-Growers' Association in May, 1888, a 6-year old ram, belonging to T. F. & C. D. McConnell, of Ripon, sheared 38 pounds of wool. A 2-year old ram belonging to the same parties sheared 33 pounds; another 28 pounds, and still another 31 pounds. A yearling ram from the same flock sheared 19½ pounds. U. Wood, of Brandon, sheared 30½ pounds from a 3-year old ram, 27 pounds from a 2-year old, and 21 pounds from a 4-year old ewe. Dixon Bros., of Brandon, sheared a 3-year old ram that produced 29¾ pounds. Twelve rams produced an aggregate of wool that averaged 30 pounds 5 ounces each. The exhibition was never equaled in the State, and Delaine Merinos, rams, and ewes gave a wonderful showing of staple 2½ to 4 inches in length, mostly running 3¼ to 3¾ inches.

The shearing of the Southeastern Wisconsin sheep-breeders at Caldwell, April 27 and 28, 1892, made a good showing for the Merinos, and an indication that the Merino breeders were striving for a larger sheep with more mutton quality, less wrinkles and yolk, and longer staple. A Rambouillet ram owned by H. O. Bayley attracted much attention. He was 5 years old, weighed about 200 pounds, had a fairly good mutton carcass, and sheared 12¼ pounds of very clean medium staple about 5 inches in length. An American Merino ram, 3 years old, gained first prize with 24 pounds of wool, and a 2-year old ram with 27 pounds. A 2-year old Delaine Merino ram gave 21¼ pounds. A Shropshire ewe, 12 months old, gave 12 pounds 14 ounces.

The shearing records of the Wisconsin association do not include many fleeces of over 30 pounds in weight, but many such rams have been bred in the State. Breeders seem to prefer rams of medium size and weight of carcass, of compact build, believing that from such animals they get the best results. The improvement in Wisconsin sheep has been uniform and steady, both in weight of carcass and in weight and quality of the fleece. The larger proportion of the best Merino wool of the State consists of a long, fine, and strong staple free from an excess of oil beyond what is necessary to the preservation of its quality and luster.

In 1883 about 75 per cent of the sheep of Wisconsin, or 1,020,000 out of 1,360,000, were of Merino blood, and 25 per cent, or 340,000, of English blood. In 1890 about 50 per cent were of Merino blood and 50 per cent of English blood, or an equal division of the 809,000 sheep in the State; 404,500 Merinos, 404,500 English sheep. This great change occurred mostly between 1885 and 1890, and had its greatest development in the Shropshires, though nearly all the English breeds contributed. The

rise in the price of mutton in 1887 and 1888 accelerated the change, and men who had pure-bred Downs or Longwools, of any of the breeds, had a great increase of business, disposing of their surplus stock to breeders without any effort and at good prices. With the demand for mutton breeds to cross on Merino ewes there came a demand on the part of the people for mutton of a good quality.

The descendants of English sheep or the common sheep of the Eastern and Middle States were introduced into Wisconsin in the early years of its history, but they were generally neglected and allowed to run out for the more profitable Merino. Some Canadian sheep were introduced from time to time between 1865 and 1880 and some were imported from England, and those and their increase contributed the 25 per cent in the State in 1883. From 1883 to the present time many pure-bred sheep have been imported from the best flocks of Canada and England, and Wisconsin can now show as fine an array of pure-bred English breeds as can be found elsewhere in the United States. The State is blessed with the very finest climate and grass, and everything to hand that is needed, and the intelligence and enterprise of her people assure the highest degree of success in maintaining a high standard and making substantial progress.

The earlier English breeds introduced into the State, and in the order named, were the Leicesters, the Cheviots, the Southdowns and the Cotswolds. The Leicesters are not as popular as some other sheep, for the reason that their mutton is too fat to suit the taste of the American palate and their fleece too open to suit the climate. The Southdowns maintain their position here, as elsewhere, at the head of mutton breeds, and yet they have not been so widely extended as some others in the new sheep husbandry of the State. In the vicinity of cities where very early and choice lambs are in demand, many are kept and their cross on the Merino is in high favor.

The Cotswolds were largely introduced between 1865 and 1868, and have been reinforced by later importations. The Cotswold breeders have met with a fair degree of success in their business. For many years they enjoyed almost a monopoly in the sale of English blood, the Cotswold being almost exclusively used to cross on the Merino for lambs and mutton. They are still in favor with many new breeders who find that the Cotswold ram will make money for them when crossed with grade sheep, the increase being profitable for mutton as well as producing a good fleece.

George Harding, of Waukesha, keeps about 100 registered Cotswolds, which are fed bran and oats, besides their coarse forage, and in the coldest weather corn is given in place of other grain. A month before yeaning time the ewes are fed roots and clover hay in place of corn. Lambs come in March and are kept well sheltered, as it is not so much dry cold from which they suffer as exposure to wet. Ewes are kept as long as they breed well. He sells his pure bred Cotswold lambs for

$20 to $25. Charles L. Day, of St. Croix County, keeps a flock of about 175 Cotswolds, which, after trying many others, he finds the most satisfactory. They are large, the fleeces average 11 pounds each, and the lambs come rapidly into condition for market, and bring good prices. They are fed on clover hay, with corn and oats alternately in winter, and pastured in summer. He has warm, comfortable quarters accessible from the pasture, in which the sheep and lambs can find shelter from storms. They endure cold uninjured if kept dry. Charles Bradley, of the same county, has Cotswolds whose fleeces averaged 12 pounds.

The Lincolnshires are well known in the State and their chief recommendation is their great size. J. W. Ganes gives the following weight of some of his Lincolnshires, March 17, 1890.

	Pounds.
Ewe dropped March 4, 1889, weighed March 17, 1890	141
Ewe dropped March 5, 1889, weighed March 17, 1890	166
Ewe dropped March 21, 1889, weighed March 17, 1890	180
Twin rams dropped March 13, 1889, weighed March 17, 1890	162 / 165
Twin rams dropped March 12, 1889, weighed March 17, 1890	168 / 170

These were wintered on clover hay without grain. Mr. Ganes' half-blood Lincolns were square built and heavy quartered, and besides showing good mutton points were heavy shearers, forty high-grade ewes yielding 312 pounds of washed wool. These ewes raised 44 lambs.

The Oxford Downs are represented by breeding flocks in the State and the Oxford-Merino cross is found very satisfactory. Lambs of this cross, less than a year old, will average from 110 to 120 pounds and sell in the home market at $5.50 per hundred pounds. In locations where there is a great demand for lambs the size and early maturity of the Oxfords give it a preference. One of its prominent breeders considers it the most hardy of the Downs, and yields him on an average 10 or 12 pounds of wool. He fed 200 in one pasture but would prefer less rather than more.

Recent sales of Oxfordshires have been made at high prices. A sale of grade Oxford ewes (half to three-quarters bred), held on the farm of the late H. Rhodes, of Sheboygan, in the midst of a strictly dairy district where but very few sheep are kept, brought $10.50 to $13.50 per head, prices not unreasonably high considering that ewes of this class produced in 1891 from $6 to $10 per head in wool and lambs. Another farmer averaged $9 each as the produce of his grade Oxford ewes for 1891.

The Hampshire Downs are beginning to show themselves in the State and have been well received. There is one breeding flock that will average about 200 pounds, producing about 8 pounds of unwashed wool. The progeny of rams crossed on grade Merino ewes average 125 to 135 pounds at 12 months' old when fed for the market.

The Horned Dorsets were introduced into the State about 1887, and much is expected of them as they are peculiarly adapted to the climate and are very prolific, two lambs at one birth being general and triplets not uncommon. Lambs six to eight weeks old weigh from 60 to 75 pounds. Mrs. Theodore L. Hacker, of Cottage Grove, Wis., stated in a paper read before the State Agricultural Society in 1890 that she had a six-months' old Dorset lamb that weighed 100 pounds, and that the lambs from the Downs and Merino ewes presented a remarkable likeness to the sire, a fine 2-year old Dorset ram.

The most popular English sheep in Wisconsin at the present writing are the Shropshires, and they are increasing with great rapidity. The grasses and pasturage for which the State is famous agree with them and hasten their development. Many breeders are handling them and selling rams to cross on Merino ewes. The product in early lambs and good mutton is remunerative, and there is a tendency among the small farmers throughout the State to adopt the Shropshire as the sheep of the future, or more correctly speaking a Shropshire ram to cross on common or grade Merino ewes.

The comparative weights of some Wisconsin-bred sheep are shown in a communication of George McKerrow to the Breeders' Gazette. The sheep were weighed August 29, 1889. The Oxfords weighed as follows: Two rams, 2 years old, averaged 303½ pounds each; 4 yearling rams averaged 203 pounds each; 4 aged ewes averaged 215 pounds each; 5 yearling ewes 177 pounds; and 8 March and April lambs 118 pounds each. The Shropshires averaged as follows: One yearling ram 190 pounds; 2 yearling ewes 176 pounds each; and 4 March lambs 100¾ pounds each. Southdowns: Two 2-year-old rams averaged 206 pounds each; three yearling rams 153½ pounds each; 2 aged ewes 150 pounds each; 4 yearling ewes 134½ pounds; and the March lambs 101¼ pounds. The heaviest yearling of each breed weighed as follows: Oxfords, 230 pounds; Shropshires, 190 pounds; and Southdowns, 161 pounds. The heaviest lambs were: Oxford, 125 pounds; Shropshire, 113; and Southdowns, 110 pounds. The ewes over 2 years old had all raised lambs but two. The lambs were not fleshy, but the older sheep were in good condition.

The following table shows the number of sheep, pounds of wool, and average of wool per head in Wisconsin from 1840 to 1890:

Year.	Number of sheep.	Wool.	Average per head.
		Pounds.	*Pounds.*
1840	3,462	6,777	1.95
1850	124,896	253,968	2.03
1860	352,954	1,011,933	3.03
1870	1,069,282	4,090,670	3.82
1880	1,336,807	7,016,491	5.25
1890	800,000	4,741,532	5.86

A recent report upon the live-stock industry of the State says that while there are yet many choice flocks of pure-bred Spanish Merinos in the southeastern part of Wisconsin, the fluctuations of the wool market have in recent times impaired, if not wholly destroyed, the profits of wool-growing, and the stud flocks of Merinos have been maintained by the sale of choice breeding animals to other parts of the world. Meantime the steady demand and good prices for choice mutton and lambs, together with improved skill in mutton-sheep husbandry, have greatly increased the interest in the heavier breeds of sheep. Cotswolds, Leicesters, and the various classes of Downs have been quite largely introduced and find here every condition for success. The soil, for the greater part, is a strong fertile loam, the surface gently rolling, and producing rich grasses. The sheep are pastured on this in summer and kept through the winter on corn fodder, unground oats, bran, clover hay, and timothy.

In the river counties—

the competition of cheap Western lands and of foreign wool-growers has rendered the keeping of Merino sheep for the wool alone anything but a profitable business on high-priced agricultural land. But the pushing, wide-awake farmers, instead of supinely sitting down and bemoaning their losses, began to change their methods to meet the new conditions. Merino sheep, except choice stud flocks, are being largely replaced by English long-wooled and Down breeds. The rich river bottoms have proved to be well adapted to the growth and success of Lincoln, Cotswold, and Leicester sheep, and the hilly pastures, fertile and well covered with nutritious grasses, furnish all the conditions needed for the Shropshire and other Downs. These changes, however, have been very gradual.

In January, 1891, the number of sheep in the State, as reported by the U. S. Department of Agriculture, was 889,910, at an average value per head of $2.92. In January, 1892, the number was reported as 907,708, at an average price of $2.96. The very slight increase since January, 1891, has been entirely in the mutton breeds, and it is known that the increase of 98,700 since January, 1890, has been confined entirely to the mutton sheep, and that the Merinos number much less now than they numbered then.

With the increase of the English mutton breeds has come a change, a decided improvement in the care and feed. The Merinos would eat weeds and live as no other animal will, but to a successful mutton sheep culture more attention and diversified feed became necessary, and that attention is now being given. The flocks do not run so large, and more grain is fed them. There is a tendency to the English system both of care and feed, and latterly rape has been used to a limited extent, but with much success.

In the report of the Wisconsin agricultural experiment station for 1891, Prof. W. A. Henry says, "not until our assessors report at least 3,000,000 sheep within our borders will this station have done its duty by this single interest," an interest second only to the dairy husbandry of the State. There are millions of acres of land in the State preëmi-

nently adapted to sheep husbandry, which will never serve its highest purpose until it is fed over by fine mutton sheep.

In the report referred to, Professor Henry gives a valuable article on the result of some experiments in feeding sheep, and some timely notes on crossing the Shropshire Down with the American Merino. Recognizing the active interest in mutton production, and the importance attached to the question of crossing fine-wooled ewes with rams of the mutton breeds for the purpose of cheaply establishing and grading up a flock of ewes for breeding mutton sheep, was the incentive to the investigation on cross breeding. Many farmers found that they could breed mutton sheep with profit, but their flock included only fine-wooled ewes. The vital question with them was how to change most cheaply and advantageously from the growing of fine wool to the rearing of mutton sheep. Observations were made on a small flock of Merino ewes crossed by a Shropshire ram. The best of six of the Merinos averaged 120 pounds; the best six of the first cross averaged 140 pounds. There was a slight increase in the weight of fleece, which was of wonderful evenness and density. From the results obtained the conclusion was drawn that "with three, or at most four, top crosses of such a breed as the Shropshire upon even such an extremely different type as the Merino, offspring would result that could not practically be distinguished from the pure-bred Shropshire. The importance of this to the farmer lies in the fact that by purchasing a pure-bred mutton ram of ordinary constitutional vigor he may hope to establish in four years a flock of high-graded mutton sheep that will approach near to the best type of any of the mutton breeds."

Important as this conclusion may be, the greater value lies in the thought that prompted the investigation, that emphasized the tendency of sheep husbandry in all the western States, that mutton and not wool is the prime object of the sheep raiser.

CHAPTER VIII.

THE SHEEP HUSBANDRY OF KENTUCKY, TENNESSEE, MISSISSIPPI, ALABAMA, AND FLORIDA.

It is doubtful if there is any other section of the United States that presents so many natural advantages for the successful and profitable raising of sheep as that bounded by the Appalachian Mountains on the east and the Mississippi River on the west, and extending from the Ohio River on the north to the Gulf of Mexico on the south. Possessing an equable climate, where the cold is not so severe during winter as to make the feeding of sheep a necessity, nor the heats of summer so intense as to work a degeneration in the character of the fleece, it has been justly considered an ideal sheep country. Particularly does this apply to the States of Kentucky and Tennessee, and the northern parts of Alabama and Mississippi. Here land is cheap and good, well watered, and the pasturage unrivaled for its quality and nowhere exceeded in abundance. Markets for wool and mutton are within easy reach, and nothing seems lacking in conditions for success. With all these natural advantages there is no section of the Union where sheep are fewer or more worthless, or where sheep husbandry is in a more deplorable condition. The exceptions to this statement are found only in some sections of Kentucky and Tennessee. The sheep inhabiting this large section are scrubs of English and Spanish breeds, descended from those of the pioneer settlers, and have undergone no improvement at the hand of man, but have lived, propagated, and cared for themselves in spite of his indifference and neglect and the voracity of his dog.

KENTUCKY.

The pioneer sheep of Kentucky were those common to Virginia, and gave a coarse wool that worked up well in the household manufacture. They are now represented in the mountain sheep of the State and play no insignificant part in the sheep husbandry of the present day. The first Merinos south of the Ohio River were two animals sold by Seth Adams, in 1809, to Judge Todd, of Kentucky, for $1,500. In 1810 Mr. Adams sold many Humphreys sheep to various parties in Kentucky and Tennessee. Some of these were full-bloods, but the most of them were half bloods. Among the sales were 85 to Col. James Trotter, of Lexington, half of them full-blooded Humphreys Merinos. In 1811 Lewis Sanders, a Mr. Prentiss, and others, of Lexington, introduced

full-blood Merinos, which furnished fine wool for the factory subsequently located there. In April, 1812, a small flock of choice full-bloods was owned at Georgetown, and in various parts of the State the animals seem to have been introduced in small numbers, and they increased steadily and prospered exceedingly well. They were the subject of much speculation, one incident of which survives. Samuel Long, of Lexington, bargained with Mr. Trotter, of the same place, for one ram and one ewe, for which he was to build Mr. Trotter a four-story house 50 by 70 feet. The house cost $15,000, and months before it was done Merinos fell in price, and six months had not passed before they could be bought for $20. Mr. Long held on to his Merinos until they reached the value of other sheep, when he killed them, made a barbecue, called all his friends to the feast, and thanked God he was not worth a ducat. He was ruined, and soon after died of a broken heart. In 1829 Henry Clay bought 50 full-blooded Spanish Merinos in Washington County, Pa., and had them taken to his farm at Ashland, where they became the admiration of the neighborhood. The Saxony sheep were introduced into the State about the same time, and in 1830 there were many flocks of fine-wool sheep. Some of these were kept up for many years, but the growing of fine wool was not the largest factor in the sheep husbandry of Kentucky.

The rich blue-grass lands of the State and the genial climate give abundant pasture nearly the year round, and mark it as the favored home of the mutton sheep. These have attracted much attention, not to say affection, and have been tenderly and assiduously cultivated. Choice specimens were imported into the State at an early day and introductions from the best flocks of this country. Canada and England had made great improvements. The improved Leicesters were raised as early as 1829 and Southdowns not much later. When the Merinos lost their popularity in the State many crosses were made and experiments attempted with the breeds—the Southdown and the Merino—but they generally ended in disappointment, and the Kentucky people settled down to the opinion that the Southdowns were their sheep. Before this conclusion many breeds had been tried, and all had a fair representation on the farms throughout the State in 1850. In that year, in Scott County, the Southdown, the Leicester, the Saxony and Spanish Merinos, and the Cotswolds had all been tried by turns, and the Cotswold was then the favorite, the coarse wool being generally preferred for jeans and woolseys. The Southdown was the best for mutton, and a cross of the Cotswold on the Southdown produced a fine carcass, good mutton, and fair yield of wool. At this time a wool-grower in Clark County found wool-growing unprofitable. He had kept 100 to 200 Merino sheep that averaged about 4 pounds to the fleece, which he sold from 16 to 20 cents per pound, or 64 to 80 cents the whole fleece. In consequence of low prices he had reduced his flock, and used a Cotswold ram to give him larger lambs for mutton. The coarse and fine

wools sold at the same price, and the coarser was in greater demand because it did not lose so much in washing and was more easily made into coarse jeans than fine wool. In Logan County, in the southern part of the State, bordering Tennessee, the prevailing breed was the common native, with the exception of some of the best flocks, which had crosses of the Spanish Merino, the Saxony, the Cotswold, and Southdown grades, with some thoroughbred. Two pounds per head of clean scoured wool, ready for the manufacturer, was about the usual clip. The Cotswolds and their crosses yielded from 4 to 10 pounds of wool suitable for the comb. The sheep were generally healthy and productive in young, the number of lambs being nearly or quite equal to the ewes. The pure-blooded sheep were not so healthy as the native sheep and half-bloods. The small farmers made no surplus wool, but used their entire clip in household manufacture. There were a few large wool-growers, one of whom, with a flock of 600 sheep, one-half Saxon and Spanish Merinos, and the other half Cotswolds, Leicesters and Southdowns, crossed on select native sheep, grew on an average 3 pounds clean scoured wool per head. The Saxon and Spanish fleece lost one-half by scouring, the other breeds much less. In Mercer County sheep were not raised in great numbers, though about every farmer had his flock. The Shakers, who in New Hampshire, New York, and Ohio were noted for their fine stock and the care they gave it, were here trying the French Merinos, which promised well on account of their thick and heavy fleeces. A cross from the Saxony and Spanish Merinos on the Cotswolds and Leicesters produced a sheep with fine, long wool excellent for worsted. The average weight of the Saxon fleece was 2½ to 3 pounds, that of the Spanish Merino fleece 3½ to 4 pounds. Other large and coarse wool sheep yielded fleeces from 6 to 12 pounds. A flock of pure Cotswolds in Macon County, 29 in number, gave 240¾ pounds of wool, an average of $8\frac{3}{10}$ pounds per head.

The Cotswolds were taken into Kentucky from Ohio about 1837, and were for many years a favorite breed in that State and the South on account of size and hardiness, and they still have many admirers who have flocks far superior to those formerly kept. From 1850 to 1860 there were many engaged in raising Cotswolds for the markets of the North and East, and the business was profitable. Before the war of 1861–'65 many of these full-blooded Cotswolds were sent to the Boston market, with Leicesters and Southdowns, and commanded good prices. In a report issued by the Department of Agriculture in 1880 it is stated that George S. Baber, of Scott County, had a flock of pure-bred Cotswolds—keeping about 40 for breeding. They had grass the whole year and in cold or stormy weather were fed some corn and oats, and were housed in very bad stormy weather, and cost in keeping the year about $10 per head, having extra care and attention. His flock clipped on an average 10 pounds combing wool, and raised on an average one lamb to the ewe. The entire surplus was sold to breeders in Kentucky

and other States at prices ranging from $25 to $100 per head, according to age and selection. Every two years Mr. Baber procured an imported or Canada ram at a cost of about $100 for his own breeding. He bred his lambs at eighteen months old.

The following, from the records of the Department, shows that common Cotswold flocks kept simply for the mutton and wool pay well. The correspondent wrote from Carroll County:

> The sheep most profitable in our county are the Cotswolds and their grades. They will consume probably one-fourth more food than the fine-wool sheep, but are hardy, needing no shelter, and generally live the entire winter on our blue-grass pastures without other food, produce from 6 to 10 pounds of wool per head, and from 60 to 100 pounds good mutton at one and two years old. I have about 50 in my flock of the Cotswolds and grades, which I have taken as a sample for the above statement. They have not eaten a single pound of hay or anything but what they have gathered for themselves in the pasture, winter or summer, for the last two years. This wool is worth, just as it comes from the sheep, unwashed, 35 cents per pound; mutton is worth 10 cents.

But the general use of the Cotswold was to cross other breeds, and good results were obtained by crossing on the native ewes. Three crosses made a good flock. The comparative profit of a flock of 100 full-bred Cotswolds and 100 common natives with the Cotswold cross is given in this statement of J. D. Guthrie, Shelby, Ky., who prefaces his statement that improved long-wools pay the best, but that those who keep common or short-wool ewes and propagate from rams of the long-wooled or mutton breeds for butchers' use, or to grade up for quality and price of both wool and mutton, were satisfied with the result.

100 common ewes, cost		$300
2 Cotswold rams		50
Feeding, etc		50
Total cost		400
100 lambs to butcher	$400	
400 pounds of wool, at 25 cents	100	
Value of ewes and rams after lambing	300	
		800
Net profits		400
100 Cotswold ewes, cost		1,200
2 Cotswold rams		50
Feeding, etc		50
		1,300
100 Cotswold lambs, $10 each	$1,000	
1,000 pounds of wool, at 36 cents	360	
Value of ewes and rams after lambing	1,200	
		2,560
Net profit		1,260

There are many who believe that the Cotswold crossed on the Southdown make the most profitable mutton sheep that can be produced in the State, and they come forward with the figures to substantiate their claim. These are too numerous to be here reproduced.

Mr. A. T. Drane, who was engaged in breeding Cotswolds from 1850 to 1866, without intermixture, then crossed them with the Lincolnshires with apparent success. He lived in a fine grass region, such as the heavy breeds delight in, and the climate proved congenial and healthy for them. They were fed upon grass exclusively, except at yeaning time, when a little grain was given them. Mr. Drane reports:

They usually have one lamb at a birth, but have twins about often enough to make up for losses, and save about one lamb to the ewe bred. They are remarkably good nurses. Their fleeces are heavy, long, and lustrous, and command the best prices for combing. I sell rams chiefly; seldom sell ewes, and without attempting to state what it will cost to keep a sheep a year, or tell how many may be kept on an acre of grass, I will merely give a glimpse of the record of my flock in 1869, and let the reader make his own deductions:

From 80 sheep sold 848 pounds of wool in grease for	$364.62
Sold sheep during the year	638.00
Rent of one ram	100.00
Total	1,102.62

I now have on hand 83 head of sheep, and my flock has yielded a gross return of $13.78 each, with a gain of 3 sheep.

One of the most eminent breeders of long-wooled sheep in Kentucky was Col. Robert W. Scott, of Frankfort, who, after many years of experiment, produced what he fondly thought was a new permanent race, the improved Kentucky sheep. The suggestion of the improved sheep came from the belief of Col. Scott that none of the prevailing breeds possessed all the requirements of sheep for the great West and South; the native sheep were inferior in carcass and in fleece. The Cotswolds were too delicate when young to bear exposure to the wet seasons; the fleece of the Southdowns was too short, and the Merino was too small. Acting upon these impressions, and believing with Sir Robert Smith, that "by proper and judicious crossing through several generations, a most valuable breed of sheep may be raised and established," Col. Scott began in 1839 his effort to combine in the same animal the hardiness and prolific quality of the native sheep, the size and weight of fleece of the Cotswold, and the symmetry of form and delicacy of mutton of the Southdown; and also to combine in the same fleeces the weight and length of the Cotswold with the thickness and softness of the Merino.

The foundation of the proposed improvement was a flock of 30 ewes selected from a flock of unimproved common sheep, and these were bred to a very large and fine Saxony Merino ram, the object being to give in the offspring more thickness to the fleece and more fineness to the fiber of the wool. This step was thought advisable before uniting the coarse fleeces of the native sheep with the coarse and still more

open fleeces of the large imported varieties, and the effect was satisfactory. The cross-bred ewes were bred on the 1st of October, after they were one year old, to an imported Leicester ram of large, full, round carcass, and a heavy fleece of long wool. To insure activity and hardiness, and finely marbled mutton of high flavor, an imported Southdown ram was used upon the ewes of this class with a result so satisfactory that Col. Scott claimed that "the wethers of this class were the delight of the epicure, while the value of the fleece was not diminished, as much being gained by increasing the number of fibers to the square inch as was lost in the length of them." The next cross was by a ram which seemed to possess many of the qualities that were desirable to establish and perpetuate in the flock. He was three-fourths Cotswold and one-fourth Southdown—a large, active, hardy sheep, with a thick, heavy fleece, qualities which his progeny possessed in an eminent degree. This infusion of blood was followed by two successive crosses of pure-blood Cotswolds, and the next cross was by a very fine full-blooded Oxfordshire ram, of remarkable softness and silkiness of fleece. Those were all large animals, with round barrels, broad backs, and full briskets. They added to the flock still more weight of carcass and fleece, while the beautiful appearance and delicate flavor of the mutton was not impaired. In the fall of 1853, a part of the flock was bred to an imported Cotswold ram, and the rest of the flock was bred to a Kentucky-raised Cotswold ram directly decended from imported stock. It was from these crosses that Col. Scott produced a flock which he described in 1854:

Their fleeces are soft, thick, and long, though not so long as the pure Cotswold, but they are much thicker, which gives them a perfect protection against the snows and cold winds and rains of winter and spring, the sheep being perfectly hardy, requiring no protection nor shelter, except what nature has thrown around them. The cross with our common or native sheep adapts them perfectly to the soil, climate, and grasses of this country, on which account, together with the frequent crossing, they are strangers to the diseases known to other flocks. The same native cross, I suppose, insures in them a prolific character, which is sadly wanting in the large imported varieties, flocks of which are still comparatively rare here, though some individuals have been in the country over twenty years. The Kentucky sheep rarely fail to raise as many lambs, in proportion to the number of ewes, as the common or native varieties, and sometimes more, though they have not had the advantage of a regular shepherd or attendant. These sheep are also as thrifty as it is desired that they should be. In summer they are often moved from pasture to pasture, so that they may eat the weeds and grasses which have been refused by other stock, while in winter a short blue-grass pasture is all which they commonly require.

After the early Saxon cross Col. Scott bred to no horned sheep, and always used rams of the purest blood he could obtain. His course of breeding and choice of rams up to 1854 resulted in a fine mutton sheep; but there was a tendency to variation which was tacitly acknowledged by Col. Scott, some years later, in this sentence:

The tendency of all improved breeds of all domestic animals to relapse to their original status when they are neglected or abused, is no proper discouragement to

this course of improvement, for such a policy would condemn the adoption of all our best breeds of horses, cattle, sheep, and hogs; for all have been produced by careful and judicious crossing and selection, and all improvements in stock can be maintained only by a reasonable share of the same care and judgment by which the improvement was originally effected.

To maintain the improvement, to obliterate discrepancies, and produce complete uniformity and fixity of type, Col. Scott bred in 1854 to five select rams of his own breeding. The progeny showed some success in the direction aimed at, and though there was some variation in their carcasses and fleeces, they were in all respects beautiful and valuable animals of their kind. Still carrying out the same design, in the fall of 1855 he tried chiefly to a mixed ram, in which was blended Cotswold, Oxfordshire, Teeswater, and Southdown blood. He was a finely formed sheep, of large size and a thick fleece of medium length and fineness of fiber, and his lambs possessed great beauty and value. In 1856 he bred chiefly to a large and fine Cotswold, and in 1857 to him and to a ram of mixed blood, the ewes being so selected and bred as to produce a more complete uniformity in the progeny, those having a predominance of Southdown and Merino being bred to the Cotswold, and those having a predominance of Cotswold qualities being bred to the mixed-blood rams. In 1858 two large and fine rams of his own breeding were used in the same manner and for the same objects chiefly, that is, to give uniformity and stability to the flock. A few ewes were also bred, in 1858, to a very fine mixed-blood ram, which was a perfect model of symmetry, and which had taken a premium at the Kentucky State fair, at Louisville, that year. In October, 1859, the flock of about 100 ewes was again selected and bred with a view to the same object, about one-half being bred to the above-mentioned premium animal and the remainder to a selected and fine improved Kentucky sheep, which had a fleece of remarkable length, fineness of fiber, and was of good size and fine form. By this time the sheep were as essentially alike and uniform, maintained their identity and imported their qualities as surely, as sheep of any other breed. They had been exhibited with success at many State and county fairs, and had been sold and sent to almost every State in the West and South and to California; and all that Col. Scott could raise from a flock of about 100 ewes found ready sale at the uniform price of $30 for those 1 year old and under. After 1860 and up to 1866 well selected rams of his own breeding and those of Leicester and of Cotswold blood were used by Col. Scott in such a manner as to impart some valuable qualities either to the fleece or the carcass, or to the constitution of the progeny; pure Cotswold, superior in form and size and fleece, being raised in 1865 and 1866. In the last-named year Col. Scott prepared an article for the annual report of the Department of Agriculture which has been used almost literally in this sketch, in which he claimed that through the means used he had secured essential uniformity, and produced a sheep that could face the bleakest winters and the

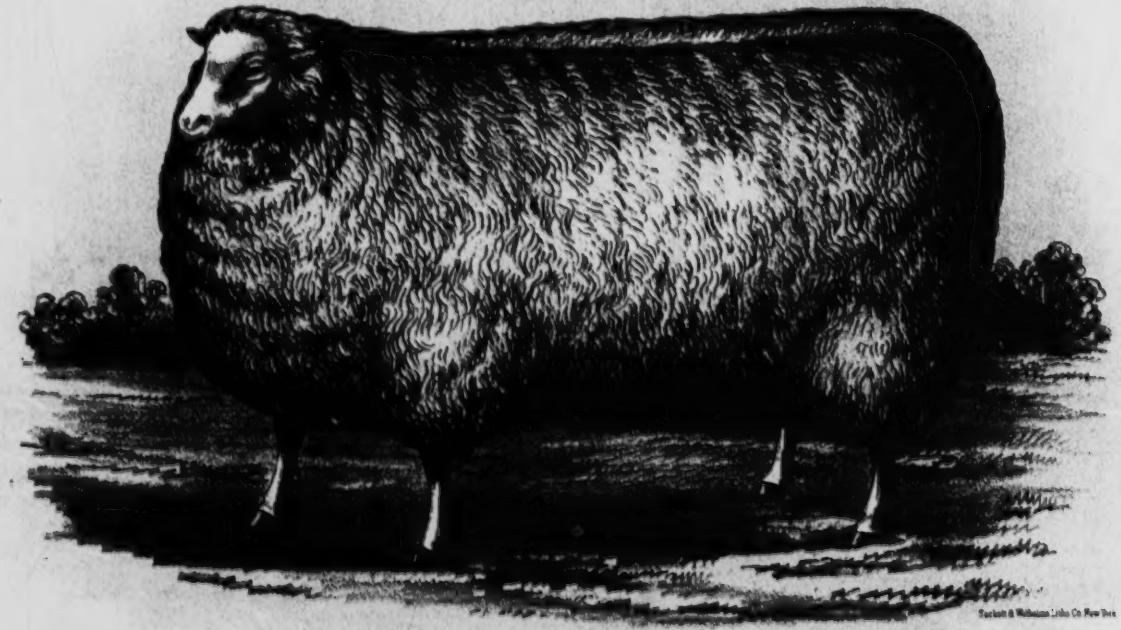
hottest and driest summers without any protection except that which nature gave them; that they were almost entirely free from all disease, and that in springs and summers of excessive rains, clothed to the knees and to the ears by a thick, long, and impenetrable fleece, they bade defiance to the wind, rain, and snow, and seemed at all times to be comfortable and sprightly.

They developed a great tendency to take on flesh and fat, so much so that ewes which lost their lambs not unfrequently became, on grass alone, too fat to breed; and in several instances fully 3 inches of fat formed on the ribs, though fed on grass only. They were prolific, and Col. Scott raised one-third more lambs than there were ewes in the flock.

A yearling ram of this flock weighed 174 pounds; a 2-year-old ram, never shorn, 224 pounds; a grown ewe, 162 pounds; a ewe lamb, 114 pounds. These weights were taken in August, all off of grass, without extra keeping of any kind. The weight and character of their fleeces are thus gived in Col. Scott's article:

The fleeces of these sheep vary from 8 to 15 pounds, the whole flock of over 100 breeding ewes having averaged over 8 pounds of merchantable wool, free from burrs and tags, and though not washed on the sheep's back, still clean enough for domestic manufacture. Though the fleeces of these sheep (like those of all other breeds), are not perfectly uniform as to length, thickness, and fineness of fiber, still there is a general uniformity, and the diversity is of no practical disadvantage. Their wool is longer than that of any sheep except those of the Cotswold family, and is equal in length to that of many individuals of that family, while it greatly excels the wool of the Cotswold in fineness and softness of fiber, and in the number of fibers to the square inch. In some individuals it is wavy or curly, but it is never harsh or wiry. Except the face and the legs below the knees, the whole body is covered with a close and compact fleece, which, when full grown, leaves no open line on the back, as with the Cotswold, but gives a perfect protection to the sheep, and causes them to present a smooth, handsome, and portly appearance. Their fleeces have enough of grease and gum to preserve the softness and vitality of the fibers, even to their ends, but not so much as to give the sheep a dark and dirty appearance.

The improved Kentucky sheep had a limited distribution in Kentucky and the adjacent States, but had not that fixity of type that was essential to justify the claim of a distinct race for them. The consequence was that in time they ran out and bred back to the different strains of blood that had been used in the crossings. In some flocks the Cotswold blood predominated, but other sheep of the same flock displayed their Southdown blood and still others ran back to the quality of the hardy native that lay at the foundation of the improvement. There was an increasing want of uniformity that was not met by the infusion of blood proper to check the divergence from the supposed true type. This was even noticed by Col. Scott in his own flock, and while seeking to perpetuate and fix the type by breeding from rams raised in the flock, as late as 1879 he bred his flock to a pure-bred Cotswold ram and had done so for the two preceding years.



IMPROVED KENTUCKY SHEEP.

FROM "SHEEP HUSBANDRY IN THE SOUTH."

Charles Darwin, in his "Animals and Plants under Domestication," says:

When two distinct races are crossed, it is notorious that the tendency in the offspring to revert to one or both parent forms is strong and endures for many generations, and this strong tendency in crossed breeds to revert has given rise to endless discussions in how many generations after a single cross, either with a distinct breed or merely with an inferior animal, the breed may be considered as pure and free from all danger of reversion. No one supposes that less than three generations suffices, and most breeders think that six, seven, or eight are necessary, and some go to still greater length. But neither in the case of a breed which has been contaminated by a single cross, nor when, in the attempt to form an intermediate breed, half-bred animals have been matched together during many generations, can any rule be laid down how soon the tendency to reversion will be obliterated. It depends on the difference in the strength or prepotency of transmission in the two parent forms, on their actual amount of difference, and on the nature of the conditions of life to which the crossed offspring are opposed. * * * As a general rule, crossed offspring in the generations are nearly intermediate between their parents, but the grandchildren and succeeding generations continually revert, in a greater or lesser degree, to one or both of their progenitors.

In the inception and development of the improved Kentucky sheep, Col. Scott did not limit himself to the crossing of two varieties, but availed himself of several—the native, the Saxony Merino, the Southdown, the Cotswold, and a slight infusion of the Oxfordshire and the Teeswater. Here was an attempted amalgamation of blood which was sometimes refractory, would not fuse, and tended to reversion, to prevent which the Cotswold blood was almost continually used. The consequence was that after Col. Scott's death the flock not being bred with the required care and watchfulness it lost its characteristics, and as a distinct race of sheep the improved Kentucky has disappeared. There is probably not a flock in the whole State.

A low-grade Leicester sheep was common in the early history of the State, but it was not until about 1830 that any pure-bred Leicesters were introduced. Shortly after this time Henry Clay placed some imported ones on his farm at Ashland, following which many were imported from Canada and taken in from the Northern States.

Other breeds of sheep were, from time to time, taken into the State, but as a general thing they found but little favor, and, by 1865, were discarded for the Kentuckian's favorites, the Southdowns, the Cotswold and Scott's Kentucky sheep. The latter had grown into great favor; the Cotswold, outside the blue-grass counties, was very popular; but the glory of the blue-grass country was the Southdown. It was and still is the aristocratic sheep of Kentucky and divides with the generous people of that State their love for horses and Shorthorn cattle. Its popularity is unrivaled and it has almost superseded all other improved sheep.

The pure-bred Southdowns were introduced into Kentucky soon after their importation into Pennsylvania, by J. Hare Powell, in 1824 and 1825, and the climate and grasses were so well adapted to them and they

matured such excellent mutton that they soon became the most popular and profitable sheep that could be raised. Importations from Canada and from the best flocks of England followed; and in a few years the blue-grass sections of the State were well stocked with them or their grades. In 1855 Mr. R. A. Alexander imported 10 rams from Airdrie House, Scotland, and frequently bought also from New York importers. The descendants of this flock are now owned by Mr. A. J. Alexander, Spring Station, Ky. The oldest living breeder of the Southdown in Kentucky and in the United States is Cassius M. Clay. He began his flock in 1854 and presents "an example of persistent watchfulness and care in the selection and management of this breed of sheep for a long series of years," and, in consequence of his care, judgment, and skill as a breeder, his sheep show a uniformity of type rarely seen elsewhere, particularly in so large a flock as Mr. Clay generally maintains. At the beginning he started with the best sheep that could be had, drawing from the early importations of S. and J. Thorne, New York, and R. A. Alexander, of Kentucky; the rams used were the very best, and no ewes of other blood admitted to the flock. The first ram used was Thorne I, a prize ram, the winner at the Royal Agricultural Show at York, England, in 1853. Then came Thorne II, whose sire was Thorne I, followed by rams bred by Jonas Webb, Sir John Lubbock, Lord Walsingham and other noted English breeders, and Samuel Thorne, of New York, and R. A. Alexander and others, of Kentucky. This was a splendid foundation, and Mr. Clay built upon it intelligently. He writes in August, 1891:

> I have raised the wool from 3½ pounds to 7 on an average, with young sheep, and the weight has been increased nearly a third. My lambs will go at six months to 80 or 100 pounds. I have a buck the largest Southdown I ever saw. The theory of improved live stock is to use pure-blooded species and then improve them by attention and high feeding.

From his long experience in sheep breeding, Mr. Clay speaks with some authority as to the manner of building up a Southdown flock. He recommends the use of the native Cotswold or "mongrel sheep," found in all parts of the United States, because they are the "survival of the fittest" and are at the bottom, making a living on the meanest and scantiest food. Then use a thoroughbred Southdown ram. The product (for mutton in all the larger cities) is a half-blooded lamb worth (under 6 months) from $5 to $8 each. Nothing can excel this profit, for the sheep pay all expenses and more as scavengers, clearing out ruts, brush, and manuring the land. For cleaning out weeds alone Mr. Clay estimates that his flock of 200 Southdowns saved him annually $150. Thoroughbred rams must be used in grading up the flock, because if the first-class breeds are put again with the half-bloods the result is three-fourths scrubs, and so on until the whole flock returns to the original type. But if thoroughbreds only are used the flock advances first one-half blood, then three-fourths, etc., till the whole flock becomes full-blooded and the scrub type is lost.

FLOCK OF SOUTHDOWN SHEEP.

There were many early flocks in Kentucky besides those of Mr. Alexander and Mr. Clay, among which may be mentioned those of Mr. L. Tarlton, founded early in the fifties, Mr. Vanmeter, and many others. Those of the present day are too numerous to mention, and comprise among their owners some of the most successful stock breeders of the United States.

The pure Southdown lamb or mutton is a delicious article of food, but it is as a cross upon other sheep that the Southdown is specially valuable. The cross upon the common Merino ewe, very usual in the North, is replaced in Kentucky by the cross on the grade Cotswold, so numerous in the State, and on the so-called mountain ewes, prevalent in the mountainous and hilly sections. These mountain ewes are raised very cheaply and marketed to farmers of the blue-grass lands as feeders and for raising mutton lambs. These sheep are large, very hardy, active, and vigorous, unusually healthy, and the ewes take kindly to the better breeds of the blue-grass region and are very prolific, often producing twins. The mountain and common ewes are bought when 2 to 4 years old for $1.50 to $2, driven to blue-grass pastures, and, when in good condition, are crossed with Southdown rams. At the approach of lambing time grain is fed in small quantities to invigorate the ewe for the trials of parturition. The lambs are plump and fat at 3 to 4 months' old, and of standard weight for the city buyers, many of whom have standing engagements to take them on a certain day at a stipulated price, providing they have reached the required weight. At 3 months old, lambs sell for $3 to $5 per head, and a flock will average one and a half lambs to a ewe. This is a profitable business in some parts of the State, and it is reported that as many as 3,000 have been shipped from Winchester alone in one day, all raised on land costing from $125 to $175 per acre. After the lambs are marketed the ewes are fattened and sent to market, after being shorn of about 1½ pounds of wool. At the present day not so many Kentucky lambs and fattened sheep find the Eastern markets as in former years, nor are those received as good as in years gone by. They still maintain, however, a high reputation and command higher prices than the average Eastern sheep.

The climate of Kentucky is so genial and the sheep so hardy that they winter well in the open fields and forests. It is observed, however, that the increasing destruction of forests gives more access to cold winds and the most careful breeders consider it necessary to provide sheds or barns where the sheep may seek shelter at will, which they do when the occasion arises. The time seems not far distant when the sheep will require housing the greater part of the winter, as in the Northern States. The great advantage now possessed by Kentucky in sheep husbandry is in the bountiful supply of succulent food during the whole year, and the sheep should never be without it. Blue grass is accessible all winter and green rye and wheat are sometimes utilized. The climate does not, as in England, allow the use of turnips and other

roots, as these freeze before they can be fed, and are thus ruined; but there is no time when the sheep can not get a bite of blue grass or of rye and wheat. Red clover proves an excellent food for Kentucky sheep, either green or when cut and dried, and is used with rye and blue grass. The Kentuckians understand very thoroughly the art of feeding and their fine flocks of sheep and herds of cattle attest the fact.

The sheep husbandry of Kentucky, built upon a mutton foundation, has suffered less fluctuation and depression than that of the wool-growing States adjoining it. From 1840 to 1880 there was scarcely any variation in the number kept on farms. Flocks were maintained at about the same number and the increase was marketed at a fair remuneration. The proportion of sheep killed for mutton included all the wethers and 30 to 40 per cent of the ewes and lambs, a rate which, combined with the destruction caused by dogs, kept the number of the flocks about stationary. And this was the point generally aimed at. There were no legislative scares which in other sections decimated flocks and forced an abandonment of sheep raising. Mutton as an article of food is more generally appreciated in Kentucky than in most States, and the home market, which is always the best everywhere and for every commodity, was a good one. The average value of the sheep per head exceeds that of any other State south of the Ohio, and is exceeded only in a few States where high-priced breeding flocks and an advanced system of feeding for early markets prevail. Since 1880 there has been a decline in the number of sheep. In 1880 the number was 1,000,269; in 1890 it was 805,978, showing a loss of 20 per cent. But the decline in number was more than compensated for in the great improvement and increased value of the lesser number. The causes for the decline are twofold—the low price of mutton at some times, the destruction by dogs at all times. Ten per cent of the sheep of the State are annually killed by the dogs, causing an almost despairing condition of sheep husbandry in many localities where the loss is heaviest, some counties losing as high as 20 per cent.

Sheep and wool of Kentucky, 1840 to 1890.

Year.	Number of sheep.	Wool.	Average weight of wool per head.
		Pounds.	*Pounds.*
1840	1,008,240	1,786,847	1.77
1850	1,102,691	2,297,433	2.08
1860	938,990	2,329,105	2.48
1870	936,765	2,234,450	2.38
1880	1,000,269	4,592,576	4.59
1890	805,978	3,699,419	4.59

There has been a still further decrease in number to 773,336 in January, 1892, but a gratifying increase in value and marked improvement in quality.

TENNESSEE.

This State has all the natural advantages for sheep husbandry that are possessed by Kentucky, with the additional one of a more temperate climate. The climate embraced within the limits of the State is "peculiar in the fact that it is greatly modified by reason of mountain elevations, and is not what latitude alone would determine." In the valley of east Tennessee the climate is not so much modified by elevation as by the direction of the winds which rush up the valleys from the southwest, laden with a fructifying moisture, and producing a highly genial, productive, and healthy climate. The mean temperature here in summer is not far from 74°. On the mountains of east Tennessee and in the valleys the grasses are exceedingly luxuriant and nutritious. Blue grass, herds grass, white clover, mountain meadow, Randall grass, and many wild but valuable kinds are so intermixed as to supply constant grazing during the entire summer and early fall. The temperature of the mountains is cool, and the climate exceedingly moist. Prof. Killebrew says:

In fully half the time in summer the tops are wrapped in cloud and mist, and rains are remarkably frequent in summer and snows in winter. The frequent rains keep the grasses in a growing condition, and an equal acreage of pasture upon the rich, black, feldspathic soil of the mountain will probably supply double the grazing that it would in the valleys below. In no part of the celebrated blue-grass region of Kentucky is the sod better or thicker than upon the balds of some of these mountains. For wool-producing sheep this region has no superior in this or any other country, if they could be provided with suitable protection against the chilling rains. The cold blasts of winter may be averted by the sheltering caves. The tropical heats of the valley in summer are unknown upon these airy heights.

The native sheep found on these mountains are the descendants of the pioneer sheep taken into that country by the early settlers from Virginia and North Carolina. They are strong and healthy, as fleet as the deer and almost as wild. Their wool is white, soft, firm, lustrous, and true, and the sheep show a wonderful adaptation to the locality which they occupy. Experienced sheep-raisers on these mountains say that the higher the grazing grounds the better the wool. On the other hand carcasses increase in size as the grazing grounds approach the valley until the largest size of carcass is met within the many long, straight, and beautiful valleys that characterize the great valley of east Tennessee. One of the most enterprising sheep-breeders of Tennessee thus speaks of the native sheep:

The sheep most numerous with us, called the native or the scrub, are of foreign origin, brought over to this country by our ancestors from different portions of Europe, each bringing the favorite breed of their immediate district, and from them sprang the race of sheep now known as natives. From no care at all in breeding, except to let them breed indiscriminately among themselves without any regard to improvement, their type, as a breed, is as well fixed as any of the carefully bred European breeds; they can be selected from any other breed by the most casual observer. This is the breed of which probably nine-tenths of the sheep of the State

are composed, and this being the fact it must be the basis upon which all improvements must be made so as to utilize what we now have.*

The ewes of the native breed crossed by imported rams through several generations produce flocks better suited to the climate and surroundings of the country than any that can be imported. They form the surest and best foundation upon which to build up flocks suited to the conditions of the climate and the habits of the farmer. In this connection Prof. Killebrew makes an apt quotation from Darwin:

In producing animals for butchering it is always profitable to cross native breeds with larger and more precocious ones; providing, of course the feed and care are suitable for the development of larger animals. Native animals are always a correct expression of the feed and care which the farmers of a locality bestow upon their stock; and native animals will do better with that feed and care than any others, because they were produced by it and are exactly adapted to it. Therefore, before introducing improved stock, farmers should consider whether they can give them the food and care which they require, otherwise disappointment and loss are almost certain.

The most common and profitable use of crossing has been to improve common breeds of animals, or rather to transform them into the improved breeds. This has become so common in all parts of the country, that it is not necessary to dwell upon it; it is never amiss, however, to remind farmers that improved animals always need improved care and feed. Five or six crosses with careful selection will transform almost any scrub animals into thoroughbreds, or into animals that can not be distinguished from thoroughbreds, and which for all practical purposes are equal to them. It would, then, require but a few years of united endeavor to cause the scrub animals to disappear from every part of our country, and animals as good as our best thoroughbreds to take their place, were it not for the increased requirements of such animals, and the apparent impossibility of so suddenly modifying our agriculture as to provide the necessary conditions for their existence.

The suggestions thus thrown out by Prof. Darwin have been followed by many breeders of east and middle Tennessee with marked success, and some experiments with the Merino and Cotswold may be given from the pen of Mr. Crutchfield. His first practical experience with sheep commenced in 1864, and continued for over twenty-five years. He had been accustomed to the native sheep of the State and had never seen any of the improved breeds until he saw some Cotswolds owned by James P. Johnson, of Laurel Hill, Williamson County. Writing in 1878, Mr. Crutchfield says:

In 1864 I purchased a lot of native ewes, and was fortunate in getting the use of a superior Spanish Merino ram, bred by R. Peters, of Atlanta, Ga., to cross upon them, which cross gave great improvement in carcass, form, and fleece, covering the naked places of the natives, and making the fleece much more dense, and the fiber finer and stronger.

I saved the ewe lambs of the cross and bred them to an improved Kentucky buck, bred by Robert W. Scott, of Frankfort, Ky., which increased the size of carcass, and gave greater length and yield of wool.

The ewe lambs of his get were bred to the best Cotswold buck I could procure, American breed and imported; never using one buck longer than two years, and

*Letter of Thomas Crutchfield to Prof. J. B. Killebrew. Sheep Husbandry in Tennessee.

never breeding in-and-in. In the meantime I have added to my flock American-bred and imported Cotswold ewes at heavy cost, breeding them to the same bucks.

The imported and American-bred Cotswolds and their offspring are not superior, either in carcass or fleece, to those of my own breeding. I clipped samples of wool from Prince of Wales, an imported English-bred buck, and also from an ewe of my own breeding, which, through several generations, could be traced back through the Merino cross to the native. I sent these samples to my wool merchants in Boston, Mass., with history, and requested their opinion of the wool on its merits. They pronounced the ewe's wool superior to the buck's. It was equally as good combing wool, 18 inches long, was of finer and stronger fiber, soft to the touch, attributable to the shade of Merino in it.

The effects of cross to the Spanish Merino, in fineness and softness of fiber and density of fleece and strength of staple, remain for many generations. I cull my ewes annually, at shearing time, marking all that are deficient in form or fleece, or that are becoming aged, and set them apart with the wethers for mutton, which are sold the following spring, often taking a better price than ordinary sheep, because they gross less and are better mutton.

I sold a lot last spring (fattened principally on grass) to the butchers of Chattanooga that averaged 166¼ pounds gross, having clipped an average of 10¼ pounds of nice combing wool, which sold at 37½ cents per pound. The price for them was 6 cents per pound gross, netting me $14 per head, while the market for ordinary mutton was 4 cents. They grossed less than one-third and were sold for 15 cents per pound net.

In 1871, Mr. Crutchfield had 72 breeding ewes, a cross from the Improved Kentucky impregnated by a Cotswold ram. From 50 of these ewes he had 85 lambs, 72 living, 13 came dead, and one was killed. In reviewing his experience with his flock up to 1877, he said that at one time 23 ewes brought consecutively 47 lambs, 22 having twins and the twenty-third triplets. In 1877 50 ewes raised 79 lambs.

Since 1866 he received for sheep and wool sold	$3,974.00
He had on hand 100 head valued at	1,500.00
Value of flock and increase from it	5,474.00
He had expended for breeding ewes and rams	657.50
Leaving a gross profit for twelve years of	4,816.50

Or over 60 per cent per annum upon the capital invested, supposing the same to have been invested at the beginning, while about one-half of it was invested in the latter years. The cost of keeping is not included, and is counterbalanced by the benefits derived from the sheep.

Others have followed Mr. Crutchfield in raising sheep and lambs for the Chattanooga market, and there is now an increasing interest in the mutton breeds in East Tennessee, and excellent mutton raised there commands good markets in Cincinnati and other Northern cities.

But the best locality in Tennessee for raising all classes and varieties of sheep has proven to be the great Silurian limestone basin of middle Tennessee. This district is thus described by Prof. Killebrew:

Here the meadows are luxuriant, the pastures are green, the soil is fertile, the water abundant. Here are landscapes diversified by hill and dale, wood and stream, meadow and field, forming a thousand delightful combinations, and making an extended panorama of exquisite rural elegance and beauty. Here all the grasses

flourish; even the loftiest hills are set in blue grass, and countless flocks fleck the landscape on every side. The highest evidence that can be adduced as to the value of this basin for sheep-raising lies in the fact that sheep are grown upon nearly every farm, and up to a certain number are universally held to be profitable. Sheep require no feeding in this division during winter, when upon good grass, barley, wheat, or rye fields, except when there is a fall of snow. Then some oats, fodder, or corn is fed. They are very healthy; and, indeed, when attended to, prove a most profitable investment up to a certain number—say one sheep for every 5 acres of open land, or two sheep on every acre of permanent pasture, presuming that the farmer will have other stock in proportion to the size of his farm.

The cost of keeping sheep per annum is about $1.25. The wool of one sheep of high grade will about pay for the keeping of two. Lambs are a clear profit, and the estimated cost of wool is below 10 cents a pound. The average yield of wool for improved lands in this basin is between 7 and 8 pounds. Nearly all the natives have disappeared from this locality, and high grades have taken their place. Mutton sheep, near Nashville, good grades, bring in the market 5 cents per pound gross; lambs, grade, $3.50 to $4.50. A large trade in lambs has been built up within a few years past. Hundreds of car loads are shipped every spring from this basin to points north, and good prices realized. Good sheep farms can be bought in the basin for $20 to $40 per acre, varying according to the situation and soil.

The natives of this region were the same as those of the mountains of east Tennessee, and the first improvement was made by the Spanish Merino.

The first Merino sheep taken into Tennessee were of the Humphreys flock, through the agency of Seth Adams, most of them, if not all, being half-bloods. The first known full-bloods were 7 purchased by Mr. Mark R. Cockrill, in New York, and driven by him on foot the entire distance to his home near Nashville, about 1813. In March, 1814, Mr. Cockrill advertised in the Nashville Whig that he would have, in the fall, full-blooded Merino rams to let, and he appealed to the farmers in the vicinity to kill their common rams and improve their flocks and thus "contribute towards the establishment of independence, which is the raising of sufficient wool for home consumption." From Mr. Cockrill's flock many others were formed in middle Tennessee. In 1824 his flock numbered 800 head. They were very healthy and prospered well. The climate agreed with them, and there was no deterioration in the wool when properly cared for. His ewes weighed from 90 to 115 pounds. His wool was sent to the mills at New Harmony, Ind., and Steubenville, Ohio, and exchanged for cloth. His fleece then averaged 5 pounds to the sheep, equal in quality to the best Ohio wool.

Mr. Cockrill was an intelligent and progressive breeder, and when the Saxony sheep were imported and the rage for finer wool set in he bought some of the best Electoral Saxonies and crossed his Merino flock with them, and for many years possessed one of the best Saxony flocks in the United States, said by him in 1840 to be hardy and longer lived than the common sheep of the country, the rams of first quality producing 5 pounds of unwashed wool. Two ewes weighed 98 and 102 pounds, and 2 ewe lambs, 5 months old, weighed 56 and 62 pounds.

There was no deterioration in the sheep in any respect, and, in 1849,

Mr. Cockrill contended that by comparison he found that he was growing as fine wool as any grown in the United States or Saxony, and that some others were doing the same, and that the descendants of the Saxon importation in the low latitudes of the United States were superior to those brought over, a fact which he attributed to the climate. In 1851, Mr. Cockrill put fleeces on exhibition at the World's Fair in London and beat the Saxony. The report in making the award said:

> The wool transmitted by this exhibitor, from Nashville, is well got up, and exhibits, like the preceding specimens (German wool), a quality of fiber indicative of care and skill in the development and improvement of the fleece, which calls for the award of the prize medal.

The flock was also successful at numerous other competitions, among others at the exhibition of textile fabrics held at Cincinnati, where Mr. Cockrill was accorded a gold medal for the best exhibited specimen of wool. In 1860 the flock numbered about 1,200 head, and sheared as many pounds to the fleece and of as good quality as the flocks of Washington County, Pa. The flock survived the war and the presence of soldiers in its immediate vicinity, but it was somewhat reduced. Five hundred head remained in 1871, when the average weight of fleece was something over 4 pounds, the grade very uniform and chiefly XX to picklock, and the market value as high as any clothing wool grown in the country. Mr. Cockrill bred his flock pure to the time of his death, which occurred in 1875. It became noted, not only in Tennessee but all over the United States, and many of the best Saxon flocks of Ohio were enriched by an infusion of its blood. It is always referred to when the possibilities of wool-growing in Tennessee are under consideration, and certainly does show that the State can produce as good wool as any other portion of the world.

There were other flocks of Merinos besides that of Mr. Cockrill. Some of these were abandoned between 1815 and 1820; others survived for some years longer, but by 1860 nearly all had ceased to exist and had given way to mutton breeds, and in 1880 there were but two or three pure-bred flocks in the entire State.

The Leicesters were the first long-wooled sheep introduced into the State, and for many years they were the popular sheep. Their fleece, though not quite as heavy as the Cotswolds of the present day, was finer in texture. They could not compete, however, with the heavier carcass, as well as fleece, of their more hardy rivals, and have almost entirely disappeared and made room for the Cotswolds. There are those, however, who still believe that for general purposes the Leicester is unsurpassed, if not unequaled, by any other breed of sheep, and that for Tennessee it is the best sheep.

The Cotswolds were for a long time the favorite sheep, and they were extensively crossed on the native sheep and grades of the Leicester and those of the Merino that had survived the general abandonment of fine-wool growing. It was found that this cross made a very marked

improvement on the common sheep, and where wool-growing was still the object the Cotswold was found the most profitable and many flocks were graded up, until the whole middle section of the State was well stocked with them. The first cross often trebled the weight of fleece, and at the same time greatly increased the size and improved the form of the native. While the Cotswolds were well adapted to middle Tennessee, they were not so well fitted for the hot sun and somewhat scant pastures of the southern and western portions of the State. Level pastures and a cool climate seem best to agree with them.

The Southdowns came into middle Tennessee about the same time as the Cotswolds, and have now supplanted them in favor and are increasing more rapidly than any other improved breed. One hundred ewes of this breed will have 100 per cent of lambs, twins occurring as often as barren ewes. Thoroughbred rams crossed on the common sheep produced lambs worth from $1 to $1.50 more per head than lambs of same age by a common ram. Next to the Merinos, the Southdowns can best adapt themselves to any portion of the State, and "while they are an upland sheep and will thrive to perfection on the table-lands, they will do equally as well on the rich pastures of the middle and western portions of the State, though in flocks of smaller size. They are growing more rapidly in popular favor South than either the Cotswolds or Merinos."

In a report upon sheep husbandry in Tennessee, published in 1880, Prof. Killebrew said that the Southdown, the Cotswold, and the Merino were the three most popular breeds in the State. They and their produce constituted at that time nine-tenths of the sheep in the State outside of the common natives or scrubs.

There are yet a few descendants of the Leicester and some Shropshire Downs. The former are fast disappearing, and the latter have not proved as profitable with us as they have in England, or even in some of the Northern States, although they have been in the hands of skillful and experienced breeders to create a demand for them, either to breed as thoroughbreds or to cross upon the common sheep.

Since this was written the Shropshires have grown more in favor, and other breeds also have been taken into this section and many are well represented. No one breed combines all the good qualities, hence many crosses have been made, not only with all the improved English breeds, but also with the natives, and the latter cross is found to be the most profitable.

The native sheep, as elsewhere stated, constitute nine-tenths of the sheep of the State, yielding about 2 pounds of wool, and of mutton, gross, about 60 pounds. It is upon these sheep, now nearly replaced by high grades in this middle section of the State, as a basis that the prosperous mutton industry rests, and the success is pointed to as a guide to other parts of the State where the natives still hold the ground:

By using the native ewes of fair size, good shape and robust constitution as a base

and crossing upon them the Spanish Merino buck, saving the ewe lambs of such cross and breeding them to the Cotswold buck, we can produce a breed of sheep healthier and better suited to our climate, soil, and pasturage than any of the improved breeds, yielding as much mutton in carcass and as great a quantity of wool. A cross of Merino and Cotswold would result similarly, but would not utilize the great number of natives. A cross direct of the Cotswold and natives is a vast improvement, getting rapidly to the large carcass and great yield of wool; but without the Merino cross the density of fleece, fineness and softness of fiber imparted by it can not be attained. It is of the utmost importance that those breeding either of full-bloods or crosses should select the best of rams. A good Merino ram bred to the native ewe adds 100 per cent to the yield of wool, and greatly to the carcass in symmetry of form and fattening qualities. Nor is this all; the half-bloods are worth double their dams, and can be used as a basis of still higher and greater improvement by the use of the large carcassed, long-wooled rams, which cross will greatly increase the weight of carcass and double the yield of wool. When the number of lambs produced by one ram is taken into consideration, and when it is seen over what an immense extent, even in his own direct offspring, his good or bad qualities are to be perpetuated, how obvious, then, that none but the best bucks should be selected. How important, then, that every scrub ram in the State should be exterminated, and his place supplied with one of the improved breeds. In a few years the natives would become extinct, and in their stead we should have a breed of sheep yielding from twice to four times the quantity of wool, and of a superior quality, aside from the great increase of mutton in carcass. As a general thing in Tennessee it is not so much the quality as the quantity of carcass desired; very little difference, except in special localities, is made in the quality of mutton, just so that it is in good condition, and the larger the carcass the greater the profit.

What Mr. Crutchfield did in east Tennessee with the Cotswold others have done in middle Tennessee with the Southdowns, and with much success. At Goodlettsville, Davidson County, a few miles north of Nashville, at the base of a mountain plateau, where limestone soil gives rich pasturage and where there are unfailing streams of the best water, there was organized some years since a mutton lamb club to encourage and stimulate the protection and improvement of sheep. The object was twofold, to disseminate improved stock and to furnish the market with choice lambs. The club was limited to forty members. There are two annual sale days—one in May, the other in June. Expectant buyers are notified by the secretary that on a designated day in May the members will offer their wool and lambs at auction sale. The lambs are examined by a committee of members who see they are up to the regulation weight for the month and not deficient in quality. Those only which can pass this examination are put up. After the buyers have an opportunity for inspection sealed bids are offered and the highest bidder takes the property. As many as 1,500 have been sold in one day at prices ranging from $6 to $8 per 100 pounds. Some of these were to be used in improving flocks, others to grace the tables of those who appreciated good lamb. The sale in June does not command top prices, the stock offered being not quite so good and the market not so buoyant. A premium is given by the club to the member producing the best lambs.

The friendly rivalry engendered by this club has greatly improved

the sheep of the county, which is shown on many of the farms and in the better quality and higher price of lambs and mutton in the Nashville market.

Smith County is in the blue-grass district, and there is no better grass county in the State. Every hill and valley that is not covered can be covered with a rich blue-grass pasture. There is always plenty of pasture for sheep in summer and for feed in winter, and yet but a few years since a committee was appointed to consider the adaptability of this county to profitable sheep husbandry. The committee came to these conclusions:

(1) That one acre of average pasture will keep 3 sheep in good condition the year round, with only an addition of a little feed in winter for the few days that the ground is covered with snow.

(2) That the net profits on sheep in Smith County, as elsewhere, are large, amounting to more than 50 per cent.

(3) That the best breeds are the Leicester, Cotswold, a cross of the Leicester and Cotswold, and the Southdown. One of our correspondents, we have seen, prefers a cross of the Leicester upon the Merino, and certainly if the lambs, as he claims they do from that cross, weigh from 75 to 100 pounds at four or five months, his preference is justified by the result.

(4) That here in Smith County sheep need scarcely any feed the year round.

(5) That what are known as the common scrubs are not worth keeping. They yield too little wool and make too little mutton, and are of too poor a quality to pay for raising them.

As one proceeds westward from this favored blue-grass region he comes to the plateau slope of west Tennessee, where in general the lands are low and the surface generally broken by gentle undulations, except in the river basins. Although the soil of this portion of the State, being quite sandy, is not so well fitted for grasses as the section we have just left, nevertheless some grasses find a most congenial soil. Herd's grass grows luxuriantly and orchard grass finds a congenial home. In the bluff loam lands, next the Kentucky line, clover attains its highest development. The river and creek bottoms of the extreme western counties are covered with a hardy grass that affords fair grazing both summer and winter, and there is also a great quantity of Smith cane that keeps green all winter, and of which sheep are very fond. The best of all grasses in this section, though not a winter grass, is the Bermuda, and for successful sheep farming this grass alone would suffice. Turnips and fields of rye and wheat would make up the winter pasturage. Blue grass will grow in this section, but it does not make a good sod. Taken as a whole, west Tennessee has a larger proportion of rich soils adapted to heavy mutton sheep than any other part of the State, but the sheep husbandry has not claimed the attention there that its importance warrants. In many counties there is not enough wool grown to furnish stockings to the inhabitants or mutton to a hundredth part of them. Cotton-growing absorbs the attention of the people and sheep husbandry is neglected. With access by railroads to good markets, where good prices could be realized for early lambs and

fat mutton, the business is utterly neglected and despised. Owing to the milder climate January lambs are as healthful and hardy as the February lambs in the central part of the State, which is a great advantage, as it gives the benefit of bare markets to the west Tennessee breeder.

If more attention were given to raising sheep in that division and less to cotton-growing, great improvement would soon be visible, not only in the general management and productiveness of the farms, but in the financial status of the farmers themselves. There is nothing for which there is so constant a demand as fat lambs and good mutton. Wool, which can be produced at about the same cost as cotton, is always of ready sale. A diversified agriculture is greatly needed in west Tennessee, and there is no branch of farming more interesting and more remunerative than the breeding of sheep. With the lands in west Tennessee carrying a fair number of sheep there would be, in the aggregate, an immense addition to the income of the farmers, and thrift, plenty, and contentment would take the place of doubt, fear, and disappointment.*

The writer just quoted recommends the discarding of long-wooled sheep in the western section of the State, to give place for a variety suited to the climate and the grazing facilities of the country, and suggests the Merino blood as a foundation, crossed up with Southdown. This would make a most profitable breed for the farmer, giving him a hardy, quick-maturing mutton sheep, with a sufficient fleece to pay him handsomely on his investment. To sum up the whole and get the best breeds for the different sections of the State, three only are considered, and those having the most desirable qualities sought after by the breeder—hardiness, fleece, and mutton. For the first the Merino should be chosen, for the second the Cotswold, the best known and most generally used of all the long-wooled breeds in the State, and for mutton the Southdown. For the eastern division of the State the Cotswold and Merino cross, for the middle division the Cotswold and Southdown, and for west Tennessee the Merino and Southdown. The keeping of large flocks by farmers is not advised, for in nine cases out of ten it would entail annoyance and expense, while a few sheep well cared for would be profitable to every farmer, and if such small flocks were bred up to high grades, supposing at first they were natives, the profits would be much increased. Sheep should not be the only product of the farm, but they should be one of them, a factor in diversified agriculture.

With all the natural advantages of climate and pasturage Tennessee has shown little or no progress in sheep industry. The few improved breeds that have been introduced into the State were in such small numbers and have been so lightly appreciated that the impression made by them on the native scrubs is insignificant. In 1840 the number of sheep in the State was 741,593, yielding 1,060,332 pounds of wool, or 1.43 pounds per head; in 1850 the number was 811,591 sheep, producing 1,364,378 pounds, or 1.68 pounds per head. In this period

*Sheep Husbandry of Tennessee. J. B. Killebrew, 1880.

the farmers paid more attention to horses and mules as live stock, and sheep were neglected. The work was mainly done by negroes, and with the raising of horses and mules in most every part of the State, and cotton, hemp, and tobacco in the middle and western parts, the farmers were content, and few even saw proper to raise enough wool to make clothing for the population, and there was a falling off in sheep from 1850 to 1860. The very few who did engage in the business of sheep industry, even on a small scale, became discouraged and disheartened by the destruction of their sheep by dogs.

Almost every family raised dogs; many of the well-to-do farmers owning packs of hounds, and no negro considered his outfit complete without one or more worthless curs. Being half-fed in many instances, they naturally sought to provide for themselves, and the sheep being a remarkably timid animal, running from the sight of a dog, they fell an easy prey.

Under such circumstances many abandoned the business.

The completion of some railroads, connecting with those running to the north and east, gave the industry an impetus in favored sections and the prospect was encouraging, but the war of secession give it a setback. Vast armies marched and countermarched over her fields from 1861 to 1865, and the sheep spared by the dogs were eaten by hungry soldiers. At the close of the war, and after the construction of more railroads in a system that brought the great markets of New York, Boston, Philadelphia, Chicago, St. Louis and other northern and western cities near the farms of the South, early lambs were readily disposed of, and those who had large fat lambs to sell in May or the early part of June received for them $3.50 to $4.50 apiece, whereas, before this, the farmer considered himself fortunate if he received $1 per head. This, and the demand for fat ewes and wethers as well, stimulated the industry, and from 1860 to 1870, notwithstanding the destruction during the war period, there was an increase in the number of sheep from 773,317 to 826,783, but an apparent decrease in the average yield of wool per head. A new impetus was given to sheep husbandry about 1874 and 1875 by the introduction of the improved breeds and the crossing them on the altogether too numerous natives. This increased the yield of wool to 2.83 pounds per head, but the total number of sheep declined from 826,783 in 1870 to 672,789 in 1880, and the decline was due to the activity of the dogs. It was a difficult matter to persuade a farmer who had lost a nice flock of sheep between sundown and sunrise that there was any profit in raising them, or any hope for the industry.

The dog evil was such a crying one that in 1875 the legislature was compelled to take action, and, greatly to the relief and satisfaction of the sheep raisers, passed a law imposing a special tax on dogs, and the number of these decreased from 214,717 in 1875 to 182,530 in 1876, or a total decrease of 32,187. This gave great encouragement, and many farmers who had hitherto raised sheep and abandoned them, or who

had never raised them, soon embarked in the enterprise, and many more were about doing so when the supreme court of the State stepped in and decided that the law of 1875 was unconstitutional, that dogs were property and must be taxed like other property, and that a special tax could not be imposed upon them. This decision operated to the repeal of the law in 1876, and again there was a decline in interest in sheep husbandry and advancement of flocks. With the repeal of the law sheep-killing increased and so did the dogs, and many counties reported a loss of one-quarter to three-fourths of all the sheep. One county roported a loss of 20 per cent killed by dogs within thirty days after the repeal of the law.

An investigation into the condition of sheep husbandry in Tennessee in 1880 showed that the favorite breeds were the Southdowns and Cotswold, and that the former was regarded as rather the hardier sheep. Farmers situated convenient to railroads realized $4 to $4.50 for their spring lambs, and obtained from 40 to 70 cents for their wool when sent to the Eastern markets, but the amount so sent was insignificant when compared with the whole clip; indeed, it was scarcely appreciable. Native sheep sold from $1.50 to $2 per head, and the cost of keeping them was 50 to 75 cents per annum. Native wool, unwashed, which cost 5 to 10 cents to raise, sold for 20 to 25 cents per pound. Some of this wool was sold to local woolen mills, of which there were only 16 in the State, but the great bulk of it was used at home in the manufacture of homespun goods. In many counties not wool enough was grown to supply local demand, and yet there is not a county in the State in which the farmers could not raise wool enough to clothe all its people at a much less cost than the same number of pounds of cotton. The markets for fat sheep were Atlanta, Louisville, Memphis, Nashville, Cincinnati, Augusta, Mobile, and a few to Baltimore and New Orleans. In most of the counties no lambs were sold, in others very few; some counties sold them to the Nashville, Louisville, Cincinnati, New York, and Boston markets.

During the period from 1880 to the present writing, Tennessee has taken some advantage of the frequent importations of English sheep, and has shared in the general improvement of the mutton breeds, though not so largely nor so generally as many less favored States. This slight improvement, however, and the fact that it is happily situated to raise early lambs, has given stimulant to this business, and the State agent for the U. S. Department of Agriculture reports in January, 1891, that "on lines of railroad, with easy shipping facilities and favorable freight rates to New York, there has lately grown up quite a market for spring lambs at good prices, some four months old being sold as high as $7.50 per head to meet the demand for fancy priced meat in that city."

It can not be said, however, that the sheep industry has made substantial progress, nor can such progress be made until such time as the sheep is accounted better than the dog, and the people and the powers

that govern the State realize the fact that its fertile lands will not remain fertile forever under a system of agriculture that is exhausting them year by year, and that as a conservator of fertility and a renovator the sheep has no equal. There is hope in the thought that many now realize these facts and begin to agitate and discuss them. It is a question of some care in a few localities, and a degree of considerate forbearance of the dog in others.

Sheep and wool in Tennessee, 1840 to 1890.

Year.	Number of sheep.	Wool.	Average of wool per head.
		Pounds.	*Pounds.*
1840	741,593	1,060,332	1.43
1850	811,591	1,364,378	1.68
1860	773,317	1,405,236	1.81
1870	826,783	1,389,762	1.68
1880	672,789	1,918,295	2.83
1890	511,118	1,196,213	2.34

Of this nearly 1,200,000 pounds of wool only 20 per cent is graded as medium clothing wool, the remaining 80 per cent being graded as below medium, or a very low clothing wool or carpet wool. There does not appear to be a very great competition in raising carpet wool in Tennessee and probably never will be, though some economists suggest it and have considerately made calculations of the amount needed for American consumption and designated where it might be grown south and west of Ohio.

MISSISSIPPI.

The sheep of Mississippi are almost entirely scrubs, and are of two kinds, those of English origin, common in the northern part of the State and descended from the sheep brought in by the early settlers from Tennessee, Virginia, and South Carolina, and the "piney woods" sheep, supposed to be descendants from the Spanish sheep of Florida and the Mobile district. These two varieties of the scrub divide the State; the English scrub and some slight improvements on it prevailing in the northern and central parts, and the piney-woods sheep holding almost undisputed possession of the southern part. Together they constitute nine-tenths of the sheep of the State. The first improvement in the sheep of the State was made by the introduction of the Spanish Merino.

The first full-blooded Spanish Merino known to have been taken into Mississippi was a Livingston ram by Gen. James Wilkinson, in 1811 or 1812. This ram is reported as shearing 13 pounds of clean unwashed wool. From this ram and a selection of the best common ewes in the country many fine flocks were formed, and, with the possible exception of Don Pedro, this one animal did more to improve the sheep than any other one ram in the United States at that time. Many flocks traced

their origin to him. The plan pursued in the formation of an improved flock was that marked out by Livingston and published in his "Essay on Sheep." One flock has left some record. In 1824 Mr. B. L. C. Wailes commenced by the selection of ewes as highly improved by crossing on the Merino as could be obtained in the country, an improvement tracing its origin to the Livingston ram. His flock was increased from time to time by the addition of choice ewes from different flocks, most of which obtained their blood from the same Livingston-Wilkinson ram. It was subsequently crossed by a Merino ram from Kentucky, owned by Mr. J. Dunbar.

In 1831 Mr. Wailes purchased a pair of Saxons and introduced them into his flock, and his sheep soon became characterized by a plump, compact form, full quarters, and by a fleece enveloping the entire body and legs down to the hoofs.

In 1839 Mr. Mark R. Cockrell, who had large flocks of Spanish and Saxon Merinos, became a cotton planter in the State of Mississippi in latitude 32½° north, and removed his Saxony flock from Tennessee, in latitude 36°, to his cotton plantation, where he kept them six years. In that level, damp country where he grazed them they did well, grew larger, and produced soft, cotton-like wool, free from hard hairs. This was more particularly the case with his Saxons, but in many cases the Spanish Merino showed like results. The wool grown in that climate was superior to most of that grown elsewhere. It possessed more of the requisites for a perfect fleece and fitness for superior broadcloth than the produce of the same sheep in latitude 36°, attributed to the fact that in Mississippi the food was better adapted to sustain a healthy condition of the skin, which was kept oily by warmth, green herbage and succulent food during winter as well as summer. The pores of the skin were not closed, the wool did not cease to grow, there was no fever from housing, crowding, and from dry food, but a regular, uniform, and continuous growth of fleece the whole year. Ten years' experience and observation convinced Mr. Cockrell that in Mississippi the tendency was to the improvement rather than to deterioration in the quality of the wool, even where the finest wools were attempted. A flock in the warm climate required but little feeding, a very small investment in land, and but little labor in preparing for winter.

Although sheep husbandry was not a favorite and popular occupation, and did not assume a high position in economical importance, yet quite a number of Merinos were kept in the State, and were very healthy. In 1845 Thomas Affleck, Washington, Miss., purchased 31 Saxony and Spanish Merinos and 15 Leicesters for his plantation, and was to add to this purchase a fine Saxony and Spanish flock from Washington County, Pa. In 1846 E. R. Brown, of Gallatin, bought 4 Spanish Merinos of William Jarvis, and closely following this other purchases were made in Vermont and Ohio for Mississippi plantations, purchases due, in a great measure, to Henry S. Randall's letters on

"Sheep Husbandry in the South." From this time sheep husbandry began to attract more attention, and there was an inquiry for improved breeds.

But sheep husbandry made no substantial progress. Sheep were healthy and flocks multiplied with great rapidity, but dogs cut off the increase, and, as is generally the case, the destruction was of the best sheep, and the increase was confined to the common sheep. With all the natural advantages of climate and good pasturage the improvement of sheep was practically abandoned by 1850, although the census figures show an increase from 128,367 sheep in 1840 to 304,929 in 1850. In this latter year there were Southdowns, Merinos, and other blooded sheep, but they bore no appreciable proportion to the great number of mixed blood and common sheep. The common scrub was the most healthy, consequently the most popular. They ran on waste land and in open woods, and cost next to nothing, ordinarily not being fed at all, and only when necessity compelled were they given a few blades of Indian corn. Those in the southern part of the State had no feed of any kind except what they hunted themselves, and they had no attention. With all these advantages there were but small flocks kept barely for domestic or family use, giving about 2 pounds of wool per head on the average and furnishing mutton that was claimed to be equal to any in the world. In general, all effort at improvement had been abandoned; the exceptions were on a few plantations where the Southdown was raised for mutton and the Merino for wool.

There was an increase in the number of sheep from 1850 to 1860, but there was no improvement worth noting. Occasionally a planter brought from a Northern State an improved sheep and put with the common ewes, but lack of attention and knowledge of the art of handling sheep frustrated his good intention.

The war of the rebellion operated against sheep husbandry in the State. Flocks were almost entirely neglected and attention was diverted to raising horses, hogs, mules, and cattle to supply the wants of the Confederate army. The State was one of the chief granaries of the South. The close of the conflict found nearly all of the sheep of the central and northern part of the State destroyed, and no immediate effort was made to replace them. The price of cotton ran so high that the farmers were dazed and parted with their stock, destroyed all pasturage, and went to raising cotton. The pasturage on which sheep and other live stock subsisted was looked upon as a curse, and an energetic war was waged against it. This was a decade of sharp decline, and the number of sheep fell from 352,632 in 1860 to 232,732 in 1870. The decline continued until 1874, when the lowest point was reached since 1840. There was now an increasing interest in live stock of every kind, and sheep came in for a share of attention. The exclusive culture of cotton had proven unwise and unprofitable, and grass and stock assumed more importance. The grass that had been banished from

the plantation, plowed under and burnt out, was welcomed back as an ally, and the sheep was once more seen around the plantation home. An investigation made by the U. S. Department of Agriculture, in 1879, gives some details of progress in different sections of the State. In Claiborne a flock of 100 bred from the native ewes and a Southdown ram sold in the market for $3 per head. All the attention they received in twelve months was salt. A correspondent in Hines County writes:

I have only been experimenting three years, and during that time have tested the Cotswold on the native ewe and have found the cross of good size, but not so easily fattened. After fattening they are much more easily reduced in flesh than the cross of the Southdown on the common ewe. I have only my original imported Cotswolds two years, having lost all their increase, *i. e.*, the full-bloods. I feel very much encouraged in sheep husbandry and will continue to increase my flock, but can not have over 200 in one flock, as penning more than this number in one inclosure at night will not do in this climate.

The consensus of many reports was that sheep did well in most parts of the State, and that they could be raised at a very low cost. The bane of the industry was the dog.

There was an increase in the number of sheep from 1870 to 1880 of more than 20 per cent, and the production of wool was largely increased, marking a gain during the decade of 446,358 pounds. This quantity of wool was the highest in the State's history, though the number of sheep was less than at the period before the war, and was accounted for by the fact that sheep were more extensively raised for wool than for home consumption or market, owing to the increase in the home consumption of the fiber by woolen mills that had been established in the State, upon which a Mississippi writer remarks:

This is but another evidence of the good results which flow from the establishment of manufactures, which create a ready local demand for the raw product to be manufactured. The production of wool will steadily increase with the establishment of new mills; improved breeds will be introduced, more time and attention will be devoted to the industry, and better safeguards will be erected around it. The State is admirably adapted to successful sheep raising, and it only needs the establishment of woolen mills and the vigorous enforcement of friendly legislation to stimulate the industry until it assumes proportions commensurate with the favorable natural conditions which exist. * * *. There seems to be nothing, except dogs, in the way of profitable sheep raising in the State.

The pine hills and level lands of southern Mississippi are especially well adapted to sheep-raising, and it is in this part of the State that most of them are raised, or, more correctly speaking, succeed in raising themselves. These are the "piney-woods" sheep, and are never cared for from one year to another. They range the woods and old fields in common, and no attention is paid to their improvement. They live on the natural grass of the country, have no diseases, and are very prolific, but unfortunately dogs, hogs, eagles and buzzards claim most of the increase. Their owners realize from 50 to 100 per cent profit on their investment, which satisfies them and they are indifferent to an improvement that would promise more. They shear from 2 to 3

pounds, which is generally sold at the county seats on certain days. It is put up at auction and the price at which it is bid off sets the price of the clip of the entire county, just as the selling price of wheat in Liverpool fixes the price in New York and Chicago. The wool is mainly worked up by the local mills; some of it, however, reaches the Mobile and New Orleans markets. The sheep of this part of the State are shipped in moderate quantity to the New Orleans market.

For over three hundred years these "piney-woods" sheep have existed on the Gulf coast without the attention of man. They have lived and increased in spite of his neglect. They are not appreciated, because they have come without effort and without cost. They do not interest their owner, for they are never in his sight, except at shearing time, and for the rest of the year he is ignorant of their whereabouts. In the heat of summer the trees provide them with shade, and the winter has no fear for them, as the climate is so equable. As shearing time approaches their owners begin to think of them, and about April 1 the inhabitants, sometimes of the county or section of country, organize a wool hunt, which means catching the sheep. This is not a difficult undertaking, as the sheep are not very wild and do not stray far from home. They are corralled and caught, sheared, marked with the owner's brand, and turned loose until another shearing time runs round. Every man is entitled to the wool of the sheep marked with his brand. The entire clip is then generally taken to the county town and sold to the highest bidder.

A correspondent of the Sheep-Breeder and Wool-Grower gives an account of the annual wool sale for Jackson County, Miss., for 1889. The day fixed was May 18. Long before daylight the teams from the interior of the county began to arrive at the county-seat, their approach heralded by the cracking of whips over the ox teams and the shouting of the negroes. A good three-yoke ox team hauled about 4,000 or 5,000 pounds of wool. During the day from twenty to thirty of such teams arrived loaded with wool. Then came small cartloads drawn by a horse in the old primitive style, a man or boy riding the horse. They own only a small flock of sheep, but they come all the same to be at the grand sale of wool. After all parties have breakfasted at one of the hotels the buyers and farmers assemble at the railroad depot, where the whole clip of the county is to be disposed of to the highest bidder, and there are bidders from New Orleans and Mobile.

When this wool is unloaded on the platform and on the sidewalks it makes a very formidable show. The first bid was 22 cents, but flockmasters would not listen to the bid, insisting that there was no tariff issue in the way this year; that last year they were cut out of 4 to 6 cents per pound, and they would yield to no such price. Bidding continued, and they bid one-half cent at a time until they got up to 25½ cents; then the farmers retired for dinner, with all hands. After dinner, say about 4 o'clock p. m., they met and compromised on 26 cents for the clip of Jackson County. Those who did not get their wool in on that day have been bringing it in ever since.

A FLORIDA PINEY WOODS SHEEP.
FROM "AMERICAN AGRICULTURIST."

The return from this wool admits of easy calculation. The sheep averaged about 3 pounds, which, at 26 cents per pound, makes 78 cents. The wool, though little better than carpet wool, sells at a good figure, because of the slight shrinkage in scouring. This shrinkage is seldom more than 35 per cent. The return from mutton is so uncertain that no reliable estimate can be made, but it will not, in general, exceed 60 cents, unless sent to the New Orleans market. The sheep belonging to the poor whites are seldom sold for mutton.

The natives claim that the piney woods sheep are capable of but little improvement, and that improved breeds will not do well, because one man, some ten or twelve years ago, bought a Merino ram, for which he paid $100, turned him out with 1,000 ewes, and he died. That settled the question as to improved stock in that section of country. A recent writer, in noticing the want of interest in the sheep in this section of the South, makes this comment on the system, or want of it, followed by the farmer:

> Those who raise sheep, if allowing them to roam in the pine woods can be called raising, thoroughly understand the animal with which they deal. Intelligent Northerners who have gone South to teach the natives how to raise sheep have uniformly failed, not only to instruct, but to succeed themselves. But, though the Southerner understands his sheep as they are, he has not the remotest idea how to improve either the mutton or the wool. Like the Armenian or Persian, he can handle profitably the sheep which his father and grandfather raised before him; but give him an animal which requires a different treatment and he will invariably fail. The sheep of Tennessee, Mississippi, and Alabama are absolutely unimproved, and in spite of prohibitory tariffs they will so remain until immigration or education changes the character of the inhabitants.*

Whether from "immigration or education," or from other causes, great improvement in the live stock of the State is observable in the last five years, and stock-raising gives promise of success. Large areas are being fenced in for grazing purposes, and grasses sown for early spring use. The sheep have had some share in this interest, but there is great objection to their grazing with other stock, on account of their nipping the grass too close.

Sheep and wool of Mississippi, 1840 to 1890.

Year.	Number of sheep.	Wool.	Average weight of wool per head.
		Pounds.	*Pounds.*
1840	129,367	175,196	1.36
1850	304,929	559,619	1.83
1860	352,632	665,950	1.88
1870	232,732	288,385	1.23
1880	287,694	734,643	2.55
1890	240,148	629,214	2.62

*Our Sheep and the Tariff. William Draper Lewis, 1890.

ALABAMA.

The sheep husbandry of Alabama is similar to that of Mississippi, just described, and to that of Georgia bounding it on the east. The foundation is the English scrub in the north of the State, and the Spanish scrub in the south. The progress of the industry has been an unaided struggle for existence on the part of the sheep on one hand, and the persistent voracity of the dog, the eagle, the vulture, and other ravagers on the other. There was but little attention paid to sheep, and no effort made for their improvement worthy of note. A few Merinos found their way into the northern part of the State between 1820 and 1840, but they made no impression. In 1840 there were 163,243 sheep in the State, yielding 220,353 pounds of wool, or an average of 1.35 pounds per head. Sheep were raised for wool only, for domestic purposes. It was the same in 1850; wool was used for making homespun clothing and the sheep were of the most common kind. There was the beginning of an improvement about 1853, and two small lots of French Merinos from the flock of S. W. Jewett, of Vermont, were taken into the State. A few improved English breeds were introduced about the same time and there was an interest engendered in sheep, but the war of secession came on and thoughts were turned in other directions. Sheep were then doubled in number from 1840 to 1850, and maintained their number from 1850 to 1860. The weight of the fleece increased very perceptibly where any care was taken of the flock. But there was little care bestowed. A few sheep only were kept upon the farms, and their wool was regarded of no special value beyond supplying the limited wants of the landlord. The war reduced the number of sheep one-half; there was a partial recovery by 1870 and a gratifying increase after that time. The culture of cotton beginning at the close of the war was overdone, and many turned their attention to live stock and the cultivation of grasses. Sheep shared in the general disposition to such new avenues of agricultural industry, and some improved sheep were introduced into the State, and with them better care. But the improvement was confined to a few localities and to a limited number of people. The generality of the people had a great aversion to sheep, and the raising of them was not looked upon as a respectable and dignified pursuit. Still there were those who pursued it and made money. A farmer in Lauderdale reported many instances of small flocks paying over 100 per cent on investment, the manure not taken into consideration. Some grade sheep were then (1878) being raised that would average from 7 to 9 pounds of wool, and a few that would go to 10 and 15 pounds. There was a general disposition to cultivate grasses in some localities, and Bermuda grass was permitted to take possession of old cotton fields. In most of the States sheep were not fed at all, and it cost but little to rear them. The general opinion was that they did better running at large than if kept penned and fed. A case is

reported where a gentleman purchased 1,000 head of sheep for $1,000 and turned them in the woods back of his plantation, and never gave them any attention, except to salt them once a week, and that he had not failed to sell $1,500 worth of wool and sheep each year for eight years in succession.

But while Alabama possesses advantages to make this business one of great proportions even as an export pursuit, she does not grow wool enough to clothe one-third of her population. We continually hear of hard times, scarcity of money, wasted soils, and scanty crops. We see a spirit of unrest and instability characterize our laboring classes, and here at our doors are several millions of acres of pastoral lands as well adapted to wool-growing as those are in the countries we have enumerated, and only waiting the spirit of enterprise to develop them into paying investments. The mania for cotton has been transmitted from father to son, and like other forms of insanity which are hereditary, it seems to be well-nigh incurable.*

The adaptability of Alabama to raise wool in large quantities is unquestioned, and it can grow as fine a quality as any other State in the Union. But with all its advantage for so doing it has some peculiar disadvantages, and these are set forth by the writer just quoted:

Of all our domestic animals, our people have the greatest aversion to sheep. The sentiment uttered long years ago by John Randolph, that he "would go out of his way at any time to kick a sheep," is unfortunately too general to be removed. Our ideas of sheep husbandry are based upon the few ragged animals we see upon some of our farms, which are really repulsive. The difference between them and the better grades of the Merino and Cotswold is as striking as that between the Indian pony of the West and the fine thoroughbred horses of England, or of the common cattle of the country and the fine imported stock of our Middle States.

Time, patience, and attention are the chief factors in the development of any branch of industry. We first used the hoe exclusively in the cultivation of cotton; the lint was separated from the seed by the fingers, and then used only to supply the home demand. With the introduction of the better and hardier breeds of sheep, with more care in their management, more system in sheltering and pasturage, a feeling of interest would soon supplant that of aversion, and this industry would soon develop more rapidly than has cotton. To effectually secure this position for sheep husbandry the legislature of the State would have, perhaps, to be invoked, at least to the extent of securing protection against dogs. There is too much intelligence in Alabama to listen with patience longer to the opinions of those of our legislators who are too timid, or with too little sympathy with our rural population to extend protection to industries vital to our well-being. The good of the public is best promoted by extending protection to those who bear its burdens, and the law-maker who shrinks from a plain duty affixes to his name the suspicion that personal aims with him are superior to the general good. Legislation upon this subject is unquestionably needed, and to secure it we have to depend upon the diffusion of a more enlightened sentiment among those whose interests are affected by it.

The force of these remarks concerning the dog will be appreciated when it is known that 20 per cent of the sheep of the State are annually killed by dogs. Is it strange that sheep husbandry is unpopular? Is it not strange that there are any flocks in the State? The reports made to the United States Department of Agriculture blend in one continuous wail about dogs. In 1885, "the low price of wool and destruction

* Address of Dr. C. M. Howard before the Alabama Agricultural Society.

by dogs have made sheep-raising both unpopular and unprofitable. Hence, sheep have suffered from neglect." In 1886, "the low price of wool and the ravages of dogs have combined with the neglectful habit of the people to reduce the number of sheep in the State." In 1888, "sheep have decreased in number in every section of the State, except in the pine lands of south Alabama, where an increase has taken place. Several causes have operated to produce this effect, including the low price of wool, stock law, want of attention, and the old enemy, the dog." These combined causes acted disastrously on sheep husbandry, and the report for 1889 says: "One may travel across the State by rail without seeing a sheep. The number is gradually decreasing and the attention given them lessening each year."

Sheep and wool of Alabama, 1840 to 1890.

Year.	Number of sheep.	Wool.	Average weight of wool per head.
		Pounds.	*Pounds.*
1840	163,243	229,353	1.35
1850	371,880	657,118	1.76
1860	370,156	775,117	2.09
1870	241,934	381,352	1.57
1880	347,838	702,297	2.18
1890	286,238	632,565	2.21

It is estimated that 95 per cent of the sheep are still the unimproved scrub, and that 80 per cent of the wool is a low-grade clothing or carpet wool.

FLORIDA.

The first land in the present limits of the United States to feel the pressure of the golden-hoofed sheep was Florida, and the descendants of these sheep have come down to us through a period of over 325 years, and are to-day seen all over the northern and western part of Florida and along the Gulf coast to and beyond the Mississippi. In this section they constitute 95 per cent of all the sheep known, and practically defy all attempt at improvement or cross. In the eastern part of the State and in some of the central counties they have given way to low grades of English sheep; from some localities they have disappeared and left no successors. The history of sheep husbandry in Florida in the early years of the century is unknown. There are no records prior to 1840, at which time the census figures gave the State but 7,198 sheep and 7,285 pounds of wool, an average of 1 pound of wool to each sheep. In 1850 the sheep had increased to 23,311, yielding 23,247 pounds of wool. From 1850 to the present day efforts have been made, particularly in east and central Florida, to improve the native sheep by introducing English and Merino breeds, but they have generally failed. The conditions were not favorable to them. Several attempts were made in

Orange County, but the experiment was a failure, and in 1878 there was not a sheep in the county. Other counties fared as badly.

But notwithstanding failure with improved sheep in some counties, in others the natives were raised with great profit. In Suwannee the cost of raising them was nominal and the profit on first cost was 100 per cent. In Duval sheep-raising was the most profitable industry until the negroes gave up work and became proprietors of about four dogs each on the average; then it became worthless. The fleece, although light, was fine and clean, and the mutton was thought by the raiser to be finer in flavor than that at the North.

In Leon County, before the war of secession, every planter raised live stock and devoted many of his broad acres to sheep walks and pasture for cattle, but since the war this industry has been much neglected. Of late years more attention has been paid to sheep, and some thoroughbred rams have been introduced which have made great improvement; sheep do well, disease is unknown among them, and it is never cold enough to necessitate sheltering them. They yean in the open fields in December and January with perfect impunity. They are raised without being fed at all on many farms, but left entirely to subsist on the natural and wild supply of food, and without being sheltered one hour from their birth to their maturity. A successful sheep farmer, being within 2 miles of Tallahassee, the capital of the State, gives his experience:

I began sheep-raising in 1874 by selecting 8 head out of a lot that I had bought for killing and keeping them one year as an experiment. I raised 8 lambs (one pair twins), and as they did well I decided to increase my flock, and in January, 1876, I had 66 head of grown sheep. I then began to keep an accurate account with that branch of my business. I have bought some each year and killed off the inferior ones and kept only the best, until I have now 300 head. I take account of stock each January and charge myself with $2 per head for all of the grown sheep, and credit the account with all sales of mutton or wool, and have never failed to realize from the flock the whole amount of the account, or $2 per head for the flock, and leave the stock increased each year and a small balance over.

I have no pasturage except the native grasses of the country for summer grazing. The pasture lands are rather poor and sandy, and when I began raising it would require from 2 to 3 acres to keep a sheep. Now, after five years of constant grazing, I can keep on the same field 3 to 4 head to the acre. I have some nut-grass, and while I would not advise any one to put it on their lands, as I deem it an awful pest, it affords tolerably good pasturage. I have some Bermuda grass, and think well of it. It affords good pasturage, and I believe when I get my land well set in it it will keep from 5 to 10 head per acre, from April to September. This grass will not only afford good grazing, but when the land is made rich it will afford good mowings and make a good hay for winter feed. It will also kill out nut-grass. I use very little long feed for my sheep, as the grazing of cultivated lands affords food during the winter; yet some hay is very desirable to have and feed in wet, cold, winter weather. Cotton seed at the rate of 2 to 3 bushels to 100 sheep makes a good feed. I also grow turnips, and, by using movable fences, can cut off small pieces of the turnip land and let the sheep eat the turnips out of the land, and while doing so they manure the land, and as soon as they eat out the turnips I plant oats or rye on the land for late winter or early spring grazing. Sweet potatoes are excellent and cheap feed, 2 or 3 bushels to 100 head.

I believe in the free use of salt, and always keep it where the sheep can have free access to it. I use a box 3 feet long, 4 inches deep and wide, and from April to September keep the inside and edges of the box well and freely coated with tar. The sheep in eating the salt get the tar on their faces and noses, and it keeps off the flies. I think it otherwise healthy. I also use sulphur with the salt occasionally, say once in each month, and particularly in winter; it keeps off the lice. I sow oats in my cotton fields at the last working, and find it makes good winter pasturage. I have no fine stock; only the best I could select from the native stock of the country.

My sheep average me 4 to 5 pounds of wool each year. I shear in April and September. The fall shearing is more to keep the sheep from being laden with burs during the winter, as our plantations are full of burs. I do not believe a sheep should be kept after it is five years old. I kill off after they are five years old, and all male lambs as early as they will dress 24 to 30 pounds. By such a course I have no very old sheep, and rarely ever lose one. As for dogs I keep a bell on every fifth sheep. It makes considerable noise, but I like it, and the dogs fear it. I have lost but one sheep by dogs in two years, although there are fully 300 dogs within 3 miles of my flock.

The best natural grass that has made its appearance in my pastures is a grass called "velvet" or "carpet grass." It completely covers the ground where it takes hold, and affords good grazing. In the fields on our best lands there is a weed called "chickweed" that grows all winter and affords good pasturage, and sheep are fond of it. Old sedgefields afford good grazing all winter, as there is always a green crop under the sedge. Sheep are ravenous feeders, and eat almost anything green in winter. While the present open mode of cultivation is continued there need be no fears of sheep suffering for the want of feed in the winter, as they will travel 3 miles and return the same day; but when the present murderous and wicked system of botching up the lands shall have come to an end, and we have a population of live men, our farms will be inclosed and we shall grow rich by the production of wool and mutton. Then it will be necessary to look more after winter pasture.

A recent visitor reports this flock as numbering about 150 head, and kept in inclosed fields, but not receiving much attention. They had an inferior appearance, and seemed to be degenerated Leicesters, with perhaps an occasional dash of the old Merino blood, which it is believed was introduced into Florida by the Spaniards at its first settlement.

John Bradford, of the same county, reports in 1878:

Ten years ago the writer began with 25 ewes and 2 bucks, common stock. Four years ago I procured a Merino buck. Have butchered about 130 muttons, lost heavily in not looking after lambs in January and February, and very heavily (some years as much as 30 per cent) by roguish negroes, and have now 130 in my flock. The manure has more than paid for the actual cost of keeping. Have only had good attention one winter, then with the very best results, as the wool clip and increase of flock amounted to about 90 per cent of the value of the flock.

That portion of the State west of the Appalachicola River, and known as west Florida, is the principal sheep-growing region. It embraces only a tenth of the area of the State, but pastures more than two-thirds of the sheep. Here large flocks run at large in the pine woods, and the industry is a prosperous one. Whether wool is high or low the owner accepts, without complaint or comment on the tariff, what he gets, for the proceeds are not offset by any expenses. What he receives is all clear profit. The vast unbroken ranges of these pine woods are well adapted to the careless system of sheep husbandry as

there carried on. The sheep shift for themselves and the owner's only trouble and expense are in shearing them. There are flocks ranging from 500 to 10,000 each. One in Jackson County, owned by a Mrs. Carpenter, had its foundation in 1870 on 7 sheep. The increase to 1890 was 4,000, and it is stated that none were purchased or otherwise added to the flock except by the natural increase. There is a good profit derived from this flock, the clip in some years selling for $4,000. Most of those engaged in the industry in west Florida make money, realizing a handsome profit each year from the sale of wool and from the increase of the flock.

The sheep of west Florida and of the northern tier of counties are those common to the southern parts of Georgia, Alabama, Mississippi, and Louisiana, known as the "piney woods," and from which they derive the name of the "piney woods" sheep. They are the scrub sheep of the Gulf coast, of whose origin and history nothing is definitely known. In general characteristics of form and fleece they suggest a Merino origin, and a plausible theory is advanced and sustained by reasonable arguments that they are the pure and unmixed, though deteriorated descendants of the Merinos brought to Florida by the Spanish adventurers in 1565 and subsequent years down to the cession of the country to the United States in 1821. Records, however, are deficient, but the fact that sheep were brought into the country by the Spaniards, and that these "piney woods" sheep in wool and form are of a distinct Merino character, leads to the belief that the flocks of the early Spanish colonists were the direct ancestors of the "sheep which have so long led a semiwild life in the piney woods." Mr. R. M. Bell, an agent of the U. S. Department of Agriculture, who made an extended observation of these sheep, and whose experience as a Merino breeder gives weight to his opinion, believes that these sheep introduced by the colonists were of the best Merino blood, and in a published statement refers to their piney woods descendants as "a semiwild, hardy, valuable breed that within the memory of man have had no attempt at improvement of any sort."

Commenting on this statement Prof. J. P. Stelle, agricultural editor of the Mobile Register, thus writes in the Florida Agriculturist:

> Mr. Bell wants to know where these sheep came from originally, and suggests that the indications are so strongly Merino that he is led to conclude that the Spaniards, who introduced the industries into Florida, must have introduced Merino sheep of the best blood from the mother country.
>
> The breed of sheep referred to is evidently the same as we have in the pine belt all along the Gulf coast through Alabama and Mississippi. To class them as semiwild is not exactly correct, for they are naturally the tamest sheep I ever saw, particularly when all the attendant circumstances are considered. They run on the wild range and often do not see a human being for months in a stretch, yet when one does come upon them they exhibit no fear or timidity, not near so much as is usually shown by sheep in a pasture where they are visited daily.
>
> For twenty years I have been making a careful study of these sheep. I have hunted up all the old records accessible, but none of these have thrown any light on

the original introduction. Tradition says that they were found among the Indians at the early settling of the country, and that the Indians had considerable flocks of sheep which they looked after for their flesh and for their skins. The latter were dressed with the wool on and sewed together for use as bedding. The Indians do not appear to have known anything about shearing off and making any use of the wool as we use it.

There are many points in the "scrubs," as we call them, that cause me to believe that they spring from the Merino, as Mr. Bell seems to suspect. The Merino introduced and turned out to shift for itself, comes nearer being hardy in the piney woods than any of the finer breeds yet tried, and in many efforts made in Alabama to grade up the scrubs, the Merino cross has proved decidedly the most successful. All of which points with reason to a Merino origin. That the Merinos were introduced by the Spaniards, and at a very early date, is the most plausible hypothesis to which we can jump, but as in the case of our "native" peaches, it must doubtless ever remain only a hypothesis.

I am satisfied that our long-leaf pine regions must eventually rank very high as a sheep country, and I am furthermore strongly of the opinion that these scrubs are the nucleus upon which our success must be built. Why not? Our scrub, in its natural condition, is a fairly good sheep, both for wool and mutton; then it grades up rather well to the Merino, as already intimated. Of course a great deal might be done for it by selection, and its extreme hardiness would certainly justify our giving it special attention in that direction. To convey some idea of how hardy it is, I may refer to a case under my personal observation in Mobile County, Ala. Four years ago Mr. John Robertson, living on the highlands in the northern portion of the county, bought and turned out upon the range 16 of these scrub ewes with 2 males. He has given his flock no kind of attention since, other than to shear and attend to the lambs once a year (in spring), and to-day his flock numbers 200, all from that original 18. Beyond the little attention just alluded to his flock has not cost him a single dollar. Of course it would have been the same on any of the good pine lands in Florida where there was no interference by dogs, hogs, or wild animals.

My conclusions that our great success with sheep must be built upon the "native" scrub have taken shape from what I have seen coming of efforts to start the sheep business with other breeds in the coast belt of Alabama. They have been numerous. Seeing what our scrubs were doing, people have moved down from Kansas and Missouri and Illinois to make fortunes off sheep, bringing their stock with them. They never stay long. The enterprise invariably proves a failure, and they go back in disgust to give our region of country a fearful name so far as relates to the sheep industry. But we go on all the same astonishing the world with the immensity of our wool products, for the world, after receiving the reports of these unsuccessful enthusiasts, can not for the life of it understand how we manage the matter.

These sheep are small and agile, and have, in common with their Spanish ancestors, a wonderful hardiness of constitution. The fierce battles of the rams at the rutting season, rough food and hard life for over three centuries are causes that have by a process of natural selection and the "survival of the fittest" eliminated all but the strongest and healthiest animals and produced a type as distinct as that claimed by any well-established breed. These sheep have beautifully shaped heads and the horns of the ram have a graceful curl. Their wool is but little inferior to that of the pure-bred Merino, but it differs from it in not being a finely crimped, and being long and lustrous. The fine character of most of the wool is generally attributed to the mixture of grasses, herbs, and wild vegetables forming the feed of the animal, and which grew in abundance in every part of the section in which these

sheep range. The fleeces run from 3 to 4 pounds each, depending much upon the season, and sell for about the same price in the dirt as Ohio brook-washed wool. There are some of these sheep, however, grown very close to the Gulf coast, that yield but 2 pounds of wool, which is so coarse that it is almost exclusively used for making carpets.

During the summer and fall great flocks of these sheep roam unattended through the pine woods, feeding on what they can find. They range in groups during the day, traveling in circuits of many miles, and come together at night in a bedding place where they lodge. When winter approaches the rams separate from the ewes, flock together in bunches of 10 to 50, and feed by themselves. The ewes are not so socially inclined, but divide up in groups of 2 to 5, keep, however, within sight of each other and other groups, and usually come together at night.

Thus, unattended and unprotected, they are at all times subjected to the ravages of the dogs and the thieving propensity of those who like mutton but are not willing to pay for it. Self-reliant as these sheep are, and as much as they have learned to care for themselves by ceaseless vigilance, many fall a prey. But it is at lambing time in the early spring that the flocks suffer most. Then the eagles, the vultures, the foxes, the dogs, and the hogs combine to feed on early lambs. Of these the lean "razor-back" hogs are the most greedy and the most destructive. They seem to know when lambing time approaches, for days before they follow the ewes, and the first faint bleat of a new-born lamb is a signal as welcome to them as the call of a Northern farmer to his cattle and chickens at feeding time. They make an onslaught on the helpless thing, and if the mother ewe undertakes to defend her offspring she seldom escapes alive. It is a striking commentary on the social condition of some parts of Florida and southern Georgia, that when a man proposes to raise some hogs he counts in as one factor of his success the probable number of his neighbor's lambs the hogs can secure. It is rarely that more than three-fourths of the increase survives the lambing period; indeed, the owners of the flocks expect only to save from 40 to 70 per cent of lambs, and then only when the feed has been such as to give vigorous health to the ewes and there are not too many old ones at lambing time.

After lambing, and as warm weather approaches, comes the shearing, which is preceded by grand "round-ups" similar to those of the cattlemen on the Western plains and to those already described in Mississippi. The owners are assisted in this work by the "ear-flies" which come about the same time as the shearing season. It is observed that upon the coming of these flies "the sheep bunch again and resort to bedding places where they can, by numbers and stamping, raise the dust and keep off the flies."

The owners await this time, and a man is sent to hunt the bedding place, which is readily found, for there are many trails leading to it.

When it is found and the owners notified a day is designated, and early in the morning, before daybreak, men and boys on horseback, armed with long whips and accompanied by dogs, ride to the bedding place and surround the sleeping and unsuspecting flock. As the ring of horsemen closes in upon them the sheep are awakened. Some try to escape, but these are run down; the flock is collected and driven in to a place already prepared, where each man's sheep, bearing the earmark or other mark of the owner, are picked out. The lambs are given the mark of their mothers. Lambs without mothers are divided pro rata among all the owners. The best and most vigorous ram lambs are set apart as sires; all others are castrated. When the marking, castrating, and shearing are finished they are turned adrift, not again to be disturbed, or indeed thought of, until shearing time again comes around.

Within recent years many attempts have been made to improve upon this system of sheep husbandry, but the results have not been generally favorable. In some cases inclosures have been made, some care given them, and improvement made by the use of Merino rams, and the sheep have graded up well to the Merino standard, but these cases are not common. A case is cited: Mr. L. H. Cawthorn, of De Funiak Springs, has a large flock of the piney woods sheep. He imported a small flock of pure-bred Merinos for the purpose of raising rams to use on his flock. The cross of these rams on his native ewes improved the wool to such a degree that he received 3 to 4 cents a pound more for it That improvements are possible and practicable on these sheep admits of no doubt, but they must be made with caution and skill, and preferably with the Merino. Some attempts to cross with the Down breeds or to raise the Downs pure have resulted in absolute failure. What the future may develop no one can foresee, much less foretell, but it can be assumed, from experience in other places the world over, that when the proper conditions are known some will be found to take advantage of them, and with these hardy, acclimated sheep as a foundation build up a stock of wool-growing sheep inferior to none now known in the Union.

Sheep and wool in Florida, 1840 to 1890.

Year.	Number of sheep.	Wool.	Average weight of wool per head.
		Pounds.	*Pounds.*
1840	7,108	7,285	1.01
1850	23,311	23,247	1.00
1860	50,158	50,171	1.00
1870	26,509	37,562	1.41
1880	56,681	162,810	2.87
1890	110,351	325,735	2.95

SUMMARY OF PART I.

This ends a detailed investigation of the history and present condition of sheep husbandry in States east of the Mississippi River. A few words and figures are presented in the way of general summary and conclusion.

Up to within a comparatively recent day the principal aim of sheep husbandry in the section considered was the growth of wool. Mutton was a secondary consideration, and, in general, was not considered at all. But the decreasing profits of wool-growing and the increasing popularity of mutton as an article of food in the manufacturing centers and large cities, effected a change in the east forty or fifty years since, and the mutton sheep received some attention; the old native breed and the fine-wooled Merino and its grades were crossed by rams of improved breeds of English sheep. This substitution began in southern New England, eastern New York, eastern Pennsylvania, New Jersey, Delaware, Maryland, and Virginia, and in those sections is practically complete, mutton being the object of sheep-raising and wool a secondary consideration. Up to 1880 in the country north of the Ohio and west of the Alleghanies wool growing was still the principal object. Within the last ten years western Pennsylvania, Ohio, Indiana, Illinois, Michigan, and Wisconsin have been repeating what was done by the east many years before, making great changes by replacing the Merino and its grades with English sheep, so that, in 1890, over one-half the sheep between the Alleghanies and the Mississippi River were estimated to be of native or English blood. The change in the two years past in the same direction has been very marked. In all the South Atlantic States, Kentucky and Tennessee, the English mutton sheep, represented by the old native stock and some improved breeds, is vastly predominant. Taken as a whole the entire country east of the Mississippi is practically abandoning to the far West and to foreign countries the growing of fine wool, and substituting therefor the raising of sheep for food, and, incidentally, combing wool. This change in the character of the industry has caused increased attention to English breeds of sheep and English methods of sheep husbandry.

At the beginning of the present century there were in the United States about 5,000,000 sheep, all, with the exception of a few flocks in Louisiana Territory, east of the Mississippi; in 1810, from 7,000,000 to 10,000,000, according to various estimates, yielding from 13,000,000 to 15,000,000 pounds of wool; in 1812 the number of sheep had increased about 15 per cent, but the wool clip was about 21,000,000 pounds, or over 50 per cent increase, and of much finer quality than in 1810, owing to increased care and the introduction of the Merino; in 1836 there were about 17,000,000 sheep, and in 1840, 19,311,374, producing 35,804,114 pounds of wool. In the last named year all but 503,595 sheep and 699,530 pounds of wool were produced east of the Mississippi. The number of sheep east of the Mississippi from 1840 to 1890 is shown in the following table:

Table showing the number of sheep in each State east of the Mississippi for the years 1840, 1850, 1860, 1870, 1880, and 1890.

States and Territories.	Number of sheep.					
	1840.	1850.	1860.	1870.	1880.	1890.
Maine	649,264	451,577	452,472	434,666	565,918	542,248
New Hampshire	617,390	384,756	310,534	248,760	211,825	192,824
Vermont	1,681,819	1,014,122	752,201	580,347	439,870	362,112
Massachusetts	378,226	188,651	114,829	78,560	67,979	56,530
Rhode Island	90,146	44,296	32,624	23,938	17,211	20,231
Connecticut	403,462	174,181	117,107	83,884	59,431	46,759
Total New England States	3,820,307	2,257,583	1,779,767	1,450,155	1,362,234	1,220,704
New York	5,118,777	3,453,241	2,617,855	2,181,573	1,715,180	1,548,426
New Jersey	219,285	160,488	135,228	120,067	117,020	103,170
Pennsylvania	1,767,620	1,822,357	1,631,540	1,794,301	1,776,598	945,002
Delaware	39,247	27,503	18,857	22,714	21,967	22,294
Maryland	257,922	177,902	155,765	129,697	171,184	153,763
District of Columbia	706	150	40	604	.....	.....
Total Middle States	7,403,557	5,641,641	4,559,285	4,248,961	3,801,949	2,772,655
Virginia	1,203,772	1,310,004	1,043,269	370,145	497,289	444,563
North Carolina	538,279	595,249	546,749	463,435	461,638	414,819
South Carolina	232,981	285,551	233,509	124,594	118,889	102,031
Georgia	267,107	560,435	512,618	419,465	527,589	411,846
Florida	7,198	23,311	30,158	26,599	56,681	110,351
Alabama	163,243	371,880	370,156	241,934	347,838	286,218
Mississippi	128,367	304,929	352,632	232,732	287,694	240,148
Tennessee	741,593	811,591	773,317	826,783	672,789	511,118
West Virginia	.....	.....	.....	552,327	674,709	508,164
Kentucky	1,008,240	1,102,091	938,990	936,765	1,000,269	805,978
Total Southern States	4,380,780	5,365,641	4,801,398	4,194,779	4,645,445	3,835,256
Ohio	2,028,401	3,942,929	3,546,767	4,928,635	4,902,486	3,943,589
Michigan	99,618	746,435	1,271,743	1,985,906	2,189,389	2,240,841
Indiana	675,982	1,122,493	991,175	1,612,680	1,100,511	1,278,000
Illinois	395,672	894,043	769,135	1,568,286	1,037,073	988,387
Wisconsin	3,462	124,896	332,954	1,069,282	1,336,807	809,009
Total Western States	3,203,135	6,830,796	6,911,774	11,164,789	10,566,266	9,159,826

RECAPITULATION BY GROUPS.

New England States	3,820,307	2,257,583	1,779,767	1,450,155	1,362,234	1,220,704
Middle States	7,403,557	5,641,641	4,559,285	4,248,961	3,801,949	2,772,655
Southern States	4,380,780	5,365,641	4,801,398	4,194,779	4,645,445	3,835,256
Western States	3,203,135	6,830,796	6,911,774	11,164,789	10,566,266	9,159,826
Total	18,807,779	20,095,661	18,052,224	21,058,684	20,375,894	16,988,441

The following table shows the comparative number of sheep east and west of the Mississippi from 1840 to 1890:

	1840.	1850.	1860.	1870.	1880.	1890.
East of Mississippi	18,807,779	20,095,661	18,052,224	21,058,684	20,375,894	16,988,441
West of Mississippi	503,595	1,627,559	4,419,051	7,419,267	14,816,180	27,347,631
Total	19,311,374	21,723,220	22,471,275	28,477,951	35,192,074	44,336,072

The most noticeable feature of this table is the fact that the country east of the Mississippi has not held its own, the country west of it more than trebled its number from 1840 to 1850, nearly trebled it from 1850 to 1860, and nearly doubled in each of the two following decades.

There has been great difficulty in ascertaining the true amount of the wool product of the United States, especially prior to 1860, and even now some of these difficulties still exist, and all estimates are necessarily imperfect. There are several reasons for this state of uncertainty about the wool crop, the principal being (1) the imperfect

census laws and the imperfect execution of those laws prior to 1860; (2) the raising of sheep in many localities in the South for meat alone, and the failure to shear the flocks or account for the wool on the hides; (3) the failure to report the wool sold to butchers on the sheep to be slaughtered; (4) the existence of small flocks of from 1 to 25 sheep, which in the aggregate number many hundreds of thousands, and yet the wool clip from each flock being so small that the owners use it for domestic purposes, or, if they sell, fail to report the amount of the clip.*

In the following table the official figures as given by the census are adopted, except for 1890, in which case other estimates are adopted. It is believed for reasons above stated that the census figures are on an average 15 per cent below the actual wool product.

Table showing the crop of wool in each State east of the Mississippi for the years 1840, 1850, 1860, 1870, 1880, and 1890.

States and Territories.	Production of wool.					
	1840.	1850.	1860.	1870.	1880.	1890.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
Maine	1,465,551	1,364,034	1,495,060	1,774,168	2,776,407	2,982,364
New Hampshire	1,260,517	1,108,476	1,160,222	1,129,442	1,060,589	1,124,163
Vermont	3,699,235	3,400,717	3,118,950	3,102,137	2,551,113	2,208,806
Massachusetts	941,906	585,136	377,267	306,659	299,089	276,787
Rhode Island	183,830	129,692	90,699	77,328	65,080	79,610
Connecticut	889,870	497,454	335,896	254,129	230,133	218,831
Total New England	8,440,909	7,085,509	6,578,094	6,643,863	6,983,011	6,890,651
New York	9,845,295	10,071,301	9,454,474	10,599,225	8,827,195	8,702,154
New Jersey	397,207	375,396	349,250	336,609	441,110	432,663
Pennsylvania	3,048,564	4,481,570	4,752,522	6,561,722	8,470,273	4,800,610
Delaware	64,404	57,768	50,201	58,316	97,946	112,873
Maryland	488,201	477,438	491,511	435,213	850,084	796,432
District of Columbia	707	525	100	.....	.....	.....
Total Middle States	13,844,378	15,463,998	15,098,058	17,991,085	18,686,608	14,844,752
Virginia	2,538,374	2,860,765	2,510,019	877,110	1,836,673	1,751,492
North Carolina	625,044	970,738	883,473	799,667	917,756	863,837
South Carolina	299,170	487,233	427,102	156,314	272,758	293,773
Georgia	371,303	990,019	946,227	846,947	1,289,560	1,198,379
Florida	7,285	23,247	59,171	37,562	162,810	325,735
Alabama	220,353	657,118	775,117	381,253	762,207	632,585
Mississippi	175,196	559,619	665,959	288,285	734,643	629,214
Tennessee	1,060,332	1,364,378	1,405,236	1,389,762	1,918,295	1,196,213
West Virginia	.....	.....	.....	1,593,541	2,681,444	2,288,943
Kentucky	1,786,847	2,297,433	2,329,105	2,234,458	4,592,576	3,660,419
Total Southern States	7,083,904	10,210,550	10,001,409	8,604,891	15,168,722	12,979,590
Ohio	3,685,315	10,196,371	10,608,927	20,539,643	25,003,756	21,808,847
Michigan	153,375	2,043,283	3,960,888	8,726,145	11,858,497	12,989,226
Indiana	1,237,919	2,610,287	2,552,318	5,029,023	6,167,498	7,206,920
Illinois	650,007	2,150,113	1,989,567	5,739,249	6,093,066	4,144,089
Wisconsin	6,777	253,963	1,011,933	4,090,670	7,016,491	4,741,532
Total Western States	5,733,393	17,254,017	20,123,633	44,124,730	56,139,308	50,890,614

RECAPITULATION BY GROUPS.

New England States	8,440,909	7,085,509	6,578,094	6,643,863	6,983,011	6,890,651
Middle States	13,844,378	15,463,998	15,098,058	17,991,085	18,686,608	14,844,752
Southern States	7,083,904	10,210,550	10,001,409	8,604,891	15,168,722	12,979,590
Western States	5,733,393	17,254,017	20,123,633	44,124,730	56,139,308	50,890,614
Total east of the Mississippi	35,102,584	50,014,074	51,791,194	77,364,569	96,977,649	85,605,617

*Wool and Manufactures of Wool. Treasury Department, 1887.

The following table shows the comparative amount of wool grown east and west of the Mississippi from 1840 to 1890:

	1840.	1850.	1860.	1870.	1880.	1890.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
East of the Mississippi ..	35, 102, 584	50, 014, 074	51, 791, 194	77, 364, 569	95, 977, 649	85, 605, 617
West of the Mississippi .	699, 530	2, 502, 885	8, 473, 719	22, 737, 818	59, 704, 102	190, 394, 383
Total	35, 802, 114	52, 516, 959	60, 264, 913	100, 102, 387	155, 681, 751	276, 000, 000

It thus appears that while from 1840 to 1890 there was a decrease in the number of sheep east of the Mississippi of 10 per cent, there was an increase in the wool clip of 243 per cent, or in other words that one sheep in 1890 grew as much wool as 2.73 sheep in 1840, and as much as two grew in 1850. Taking the whole country the increase in number of sheep from 1810 to 1860 was only a little over 100 per cent, and the increase in wool clip was about 350 per cent during the same period of fifty years, while for the next twenty-five years, from 1860 to 1885, the increase was greater than for the former period of fifty years, viz., over 140 per cent in number of sheep and over 375 per cent in wool clip. From 1885 to 1890 sheep diminished over 10 per cent in number, and there was a decrease in the clip of nearly 9 per cent.

In 1840 the average weight of the fleece east of the Mississippi was barely 1.85 pounds; in 1850 it was 2.48 pounds; in 1860, 2.86 pounds; in 1870, 3.67 pounds; in 1880, 4.71 pounds, and in 1890, 5.04 pounds.

This improvement has been fully noted in the preceding pages and the causes therefor amply enlarged upon. With the increase in fleece there has been an increase in the size and weight of sheep of all kinds. We have no accurate data as to the weight of the American sheep in 1800, and assume that it was somewhat less than its English ancestor.

Old writers would have us believe that six hundred years ago some of the English breeds of sheep were no larger than rats and rabbits. There were a great number of breeds of sheep in the thirteenth century. The animal was small, and a wether in good condition weighed a good deal less than 40 pounds. The wool of the sheep was coarse and full of hairs. The fleece was light, an average giving 1 pound 7¾ ounces to each sheep. There was but little improvement until long after 1700. At that date an ox, without skin, head, and offal, did not weigh on an average more than 400 pounds. At Smithfield fair in 1700, oxen weighed 370 pounds, calves 50, sheep 28, and lambs 18. The live weight of English cattle in 1800 was 800 pounds for oxen, 140 for calves, 80 for sheep, and 50 for lambs. Messrs. Armour & Co., of Chicago, slaughtered in 1891 more than 2,000,000 sheep. Their average live weight was 99 pounds, and dressed weight 48 pounds. These sheep were mostly from points west of the Mississippi, and were undoubtedly grade Merinos to a great extent. The sheep east of the Mississippi, made up more largely of English blood, will weigh more than those handled by Armour & Co.

In 1890 the States east of the Mississippi, with an area of 852,000 square miles, pastured 17,000,000 sheep, or an average of 20 to the square mile; the British Isles, with an area of about 120,000 square miles, had 27,000,000 sheep, or 225 to the square mile. Were the country east of the Mississippi as densely stocked as Great Britain it would support 191,700,000 sheep, or nearly 12 where it now carries 1, and would raise nearly or quite 1,200,000,000 pounds of wool, or over 19 pounds per head for each inhabitant of the United States, or four times the requirement for clothing and other uses to which wool is put. There is no reason, physical or otherwise, why this cannot be done. There is no breed of sheep of any value that cannot find here a congenial home, be it on the low sandy soil of some parts of the South, or on the table lands and lofty peaks of the Appalachian system. Indeed, under proper treatment, most breeds improve here. American sheep husbandry is yet in its infancy, and we are not willing to admit that the breeders of the present day cannot improve upon the mutton sheep we now have as successfully as their fathers improved upon the old Spanish Merino, to which the preceding pages bear ample testimony. This great improvement can at least be paralleled; it may be excelled.

All improvement heretofore made has been by individual enterprise, much of it blindly directed. Although the National Government has for many years maintained gardens for the propagation of foreign seeds and plants, mostly ornamental, and has expended hundreds of thousands of dollars in the dissemination of common seeds and plants, it has not yet risen to the necessity of improvement of our live stock by the establishment of breeding farms. Our law makers have been bound to the theory which looked upon all breeding experiments as beyond the province of Government and outside the pale of its constitutional powers. Recently patriotic men, rising above party tradition, have passed through Congress an act creating agricultural experiment stations in each State and appropriating large sums of money for their maintenance.

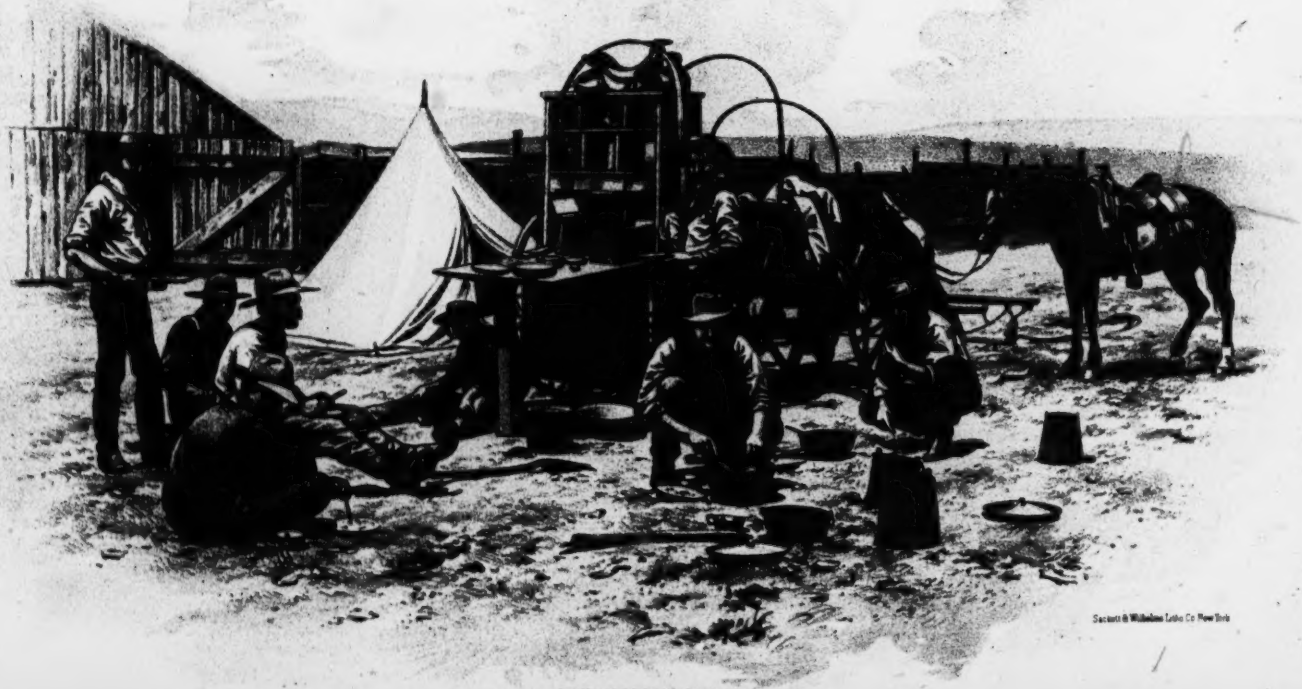
This is a step in the right direction. As yet, these stations have mainly occupied themselves in analyzing commercial fertilizers and duplicating each the other's work, or, as remarked by the Assistant Secretary of Agriculture, "they are thrashing a great deal of old straw for want of the information that it has been thrashed before." Three or four of them have conducted interesting and highly valuable feeding experiments with sheep, and one, at least, Wisconsin, recognizing the great importance of sheep industry, offers no excuse for devoting many pages of its annual report to investigations on feeding sheep and notes on cross-breeding. This is practical work of the highest value, and should be extended. Breeding farms should be connected with the stations and patient experiments made to determine the breed of sheep especially fitted for the climatic and economic conditions of the locality,

and to dispose of full-blood rams to farmers on reasonable terms. Better still, Government would find its advantage in establishing a grand breeding park somewhere in the Appalachian region, where every breed of English sheep will thrive. When Government appropriates money to maintain an expensive zöological park, abstract discussion on its right to do as much for the sheep would appear superfluous. The national welfare would be promoted by the increase of an industry which would furnish the people a cheap, healthy, nutritious food, and, incidentally, material for their clothing.

THE RANGE HERDER.

Sackett & Wilhelms Litho Co New York

THE CAMP WAGON ON THE RANGE.



THE HERDERS' CAMP.

PART II.—CONDITION OF THE SHEEP INDUSTRY WEST OF THE MISSISSIPPI RIVER.

[Chapters I–IV by H. A. HEATH. Chapter V by JOHN MINTO.]

CHAPTER I.

THE SHEEP INDUSTRY IN MONTANA, AND NORTH AND SOUTH DAKOTA.

MONTANA.

The young State of Montana has a population, according to the last census, of 132,159, which gives her the relative rank of forty-fifth among the States and Territories in point of population, yet in her sheep industry she stands well to the front. In no other Western State is that industry in a more prosperous condition than in Montana. In comparison with the other range and mountain States, Montana is peculiarly fortunate in having the most profitable class of sheep for the flockmaster, with a higher average value for each animal. The industry is similar to that of Wyoming and New Mexico, in that it is general throughout the State, every county being represented to some extent. It is thus a State industry in fact, and any legislation necessary for its protection or encouragement is readily secured. In consequence of these favorable conditions, the sheepmen, who are much abused in many other States, are here leading citizens and the most prosperous class of farmers and stockmen. The sheep business in many portions of Montana is largely the leading industry and fosters other interests which depend upon it. This is especially true of the eastern portion of the State where the sheep industry is comparatively new. Most of the sheep have been brought in within five years, and the cattle business is gradually giving way to sheep and horses. Many cattlemen have found it necessary to change their system of ranching and fatten steers instead of trying to raise cattle, owing to large losses of cows and heifers in severe winters. As the numbers of cattle decline stockmen supply their place with sheep or horses. Many former resident cattlemen of the Yellowstone country and eastern Montana are now engaged in raising horses and sheep instead of cattle.

The climate of Montana is peculiar. Although the State is of high latitude it is of low altitude. The stock belt of Wyoming, Colorado,

New Mexico, etc., is much of it 5,000 feet above the ocean; but very little of the range country of Montana is over 4,000 feet, while very much, if not the major part, is less than 3,000 feet in altitude. Through this comparatively low section of the Rocky Mountain system, a warm wind from the Pacific blows for long periods, its temperature in winter often being 49° to 50° F. This wind, however, may be suddenly chopped off by an Arctic wave, and the thermometer sink 80° or 90° in a day or two. It is this very disagreeable freak of the weather which, though it does not happen very often, "makes life a burden" to the stockmen when it does come, and renders special precautions necessary. As a rule, upon the ranges of Monana, it is either too warm or too cold to snow.

In northern Montana, according to the records of the War Department signal station, at Fort Benton, for fifteen years, from 1870 to 1886, the average rainfall in autumn was 2.51; winter, 1.93; spring, 4.15, and summer, 4.75, or a total average of 12.65 inches for the year. The records of the signal office at Helena, in western Montana, for the years 1880–'89, inclusive, show the average annual rainfall for this period to have been a trifle in excess of 11.5 inches.

Regarding the physical features, etc., which give to Montana such natural adaptability for sheep husbandry, the following extracts from a descriptive pamphlet, "Montana," by the passenger department of the Union Pacific Company describe it well :

Montana extends 550 miles from east to west, and nearly 300 north to south—a total area of about 150,000 square miles, or nearly 100,000,000 acres. We can more fully appreciate the meaning of these figures when we remember that the six New England States and the great State of New York would not cover this area; that Minnesota and Iowa could be turned over upon it and a margin left for Connecticut to rest upon, or that England and Wales, Ireland, and Scotland combined, do not near equal it in size.

This magnificent empire of the Northwest contains 30,000,000 acres of fertile farm lands, a more extensive area than is covered by an entire average Eastern State. It contains 38,000,000 acres of unexcelled grazing lands, a pasture field alone larger than the great prairie State of Illinois.

One-fifth of the area of this vast Territory, or about 20,000,000 acres, is mountainous. While a few of the ranges are broken and grandly rugged, the majority consist of beautiful swells of no extreme height, presenting acclivities so gentle that natural roads run over them by easy grades at many points. Valley, bench, and mountain often blend so evenly that it is difficult to tell just where the one ends and the other begins. The mountains are jeweled at all altitudes with copious springs, "clear and cold as crystal ice." Even the passes over the highest ranges in Montana usually have an altitude of only about 6,000 feet above sea level—no greater than the elevation of the plains at Cheyenne, Wyo., and less than 1,000 feet greater than Denver, Colo., a city surrounded by highly productive farms. Nearly all the arable mountain valleys average from 500 to 2,000 feet lower than the most fertile ones of Colorado or Utah. Montana's highest peak would hardly reach timber-line in Colorado, and her average mountains only reach heights which in the Centennial State are made to blossom as the rose. It is a land of gentle acclivities, over which you often pass without knowing when you are upon the summit.

The main range of the Rockies, the Bitter Root and Cœur d' Alene in the western

portion of the State, and the Belt, Highwood, Snow, Judith, Tobacco Root, and Bridger ranges in the southern and central portions—nearly all extending in a general north and south direction—are Montana's principal "watersheds." For convenience in description the State is popularly divided into five large basins, four lying east of the Rocky Mountains and one to the westward. These basins are broken into large numbers of minor valleys separated and sheltered by spurs projecting from the main mountain ranges. Each may be said to have its own peculiar river system—as complete and grand as those of any first-class State—and, though generally divided from each other by mountain ranges, are, as already indicated, easily accessible by good wagon roads over low passes. The valleys are wider and more extensive than any other in the Rocky Mountain chain, excepting along the valleys of the Snake and Great Salt Lake.

It is claimed that Montana presents the finest river system in America, and, therefore, in the world. Here, almost within a stone's throw, are the founts of two great rivers of our continent that finally flow into either ocean, the one with its tributaries possessing 2,000 miles of navigable waters within Montana's boundary. Northward for 300 miles, and then eastward through peaceful valleys, the fairest of all Montana landscapes, through occasional mountain gorges not surpassed in grandeur in the world, now thundering over dizzy precipices and again almost losing its identity in unruffled lakes, pours the mighty Missouri. Eastward from the National Park and across the southern portion of the State, claiming features none the less majestic and even more picturesque than the first named, is the beautiful Yellowstone. Northward and southward from points not many miles distant, and wandering in diverse ways for a thousand miles only to meet again near the western sea, flow the Hell Gate and the Snake, the two great forks of the Columbia.

Aside from the Missouri, Yellowstone and upper Columbia—each possessing thrice the volume of the Ohio at Pittsburg—are a dozen so large and beautiful that we pause and wonder whence they come, and that the world knows so little of their manifold attractions. Among these we may name Jefferson, Gallatin, Madison, Musselshell, Bitter Root, Sun, Milk, Hell Gate, Beaver Head, and Flat Head. Adding to these the almost numberless laterals which course through and beautify every ravine and valley, we find here unlimited water power and inexhaustible supplies of water for irrigation.

Several millions of acres in Montana are still set apart for Indian reservations, and comprise the Crow, Flathead, Blackfoot, and Cheyenne agencies. The lands monopolized but only partially utilized by the 10,336 Indians, comprise some of the best agricultural and grazing lands in the State. In the message of Governor Toole to the second legislative assembly of the State last winter in regard to these Indian reservations, he says:

The large Indian reservations within our borders, which were set aside by the General Government, embrace some of our best agricultural lands, and are far in excess of the requirements of the Indians, who are no longer able or compelled to live by the chase, but in every instance are the recipients of bounty from the Government. The buffalo and wild game which once abounded upon these great reservations are practically extinct, and with their departure disappeared the only reason for the maintenance of large areas of land for the occupancy of the Indians.

The writer addressed a letter to each of the United States Indian agents for information regarding sheep on their respective reservations. The uniform reply was that there were no sheep held on the reservations, and that Indians owned none whatever. Hon. M. P. Wyman,

in charge of the Crow Agency, makes the following significant statement in his letter:

> At present there are no sheep on this (Crow Indian) reservation, the Indians being opposed to having them graze on their land and owning none of their own. There are quite a number of large sheep owners residing on the border of the reserve—Big Timber, Billings, Livingston, and Red Lodge being their shipping and supply points.

Maj. Ronan, agent of the Flathead Indians, says: "Stock-raising is confined to cattle and horses." The same is true of every other Indian reserve in the State. Sheep-raising is too civilizing in its tendency to suit the "noble red man," besides he is very easily prejudiced against this class of stock, being made to believe by designing men that sheep would ruin the range. More revenue could be derived from the sheep men than is now received for the other classes of stock, and the reservation would not suffer in consequence of the change.

In 1885, Paris Gibson, one of the first promoters of improved sheep, and now one of the leading and wealthiest citizens of Great Falls, says:

> The wool-growers of Montana can congratulate themselves upon the splendid position which their wool has gained among manufacturers. It has been steadily increasing in favor, until to-day Montana stands without a rival among producers of American wools. The great advantage which the superiority of our wool gives to the sheep industry of this Territory is becoming better understood, and assures for it a substantial and rapid growth. During the dark period through which we have passed, my faith in the sheep business of Montana has never weakened; and I believe to-day, as I always have since I first came to the Territory, that Montana will in a few years rank as the first wool-producing State in the Union, and will be second only to Texas in the quantity produced. The future of the sheep business in Montana, in my opinion, is exceedingly bright for many years to come, and those who are now established in the business and understand the management of their flocks can not make as much money from a like investment in any other branch of stock-raising.

The prediction of this pioneer breeder has been verified, and two years later in a special report on "Wool and manufactures of wool," by the United States Treasury Department, in 1887, the following was said concerning Montana wools:

> These wools stand at the head of Territory wools. The soil, climate and pasturage combine to produce wool of the best character possible on wild land. In addition, the sheep industry of Montana has been developed from the beginning by men of more than ordinary intelligence, and usually with ample capital to carry on its business with such system as to obtain the best results.

There has been a steady improvement of the wool product up to the present time, and most consignments are sent to the Eastern markets in better merchantable condition than the greater part of other Western wools. Owing to this fact, their fine quality, and light shrinkage, Montana wools are eagerly sought by the wool merchants and readily taken at prices which range higher than similar wools produced in the semiarid regions of the plains.

In view of the increasing demand for muttons and stock sheep in

other States, notably North and South Dakota, a number equal to the natural increase of the flocks of Montana will be readily taken at good prices for some years. However rapidly sheep may increase for many years yet to come, there is little fear of the business being overdone. Settlers may occupy within a few years large portions of the range now used by sheep-owners within present railroad limits, yet these settlers can produce enough grain and rough feed to supply the flocks with food instead of the pasturage which they displace. The settlers, however, will mostly occupy land suitable for irrigation, and their interests need not to any great extent conflict with those of the flockmaster. The sheep-owners who will be affected by the inroad of the settler are the professional "floater" and the "squatter." The latter, instead of owning his home ranch, simply squats on some suitable unoccupied location. In the event of an inroad of homesteaders he will have to emulate the example of the more progressive flockmasters and own his home ranch.

Another distinctive advantage enjoyed by Montana sheepmen are the facilities afforded by the railroads. At all the principal shipping points the railroad companies have erected large wool storehouses, and have also extensive stockyards wherever needed. The Northern Pacific Railroad has large wool warehouses at Miles City, Billings, Big Timber, and Townsend, with capacity for a half million pounds or more. The Great Northern Railway Company has a wool-house at Great Falls, and one at Fort Benton. The size of each is 40 by 245 feet. It costs the grower nothing to store his wool in them until he is ready to sell or consign.

In the last annual report of the State veterinarian, Herbert Holloway, V. S., under date of December 31, 1890, to the governor of Montana, are found the following official statements regarding the condition of sheep in the State:

Probably for the first time in many years sheep are free from diseases of all kinds. There is not, to my knowledge, a sheep in the State affected with a contagious disease. All deputy sheep inspectors report their various counties free from scab, which is the only contagious disease with which we have to contend. During the year scab appeared in a few flocks, and under the supervision of county inspectors about 30,000 head have been dipped, which, however, have now all been released from quarantine. This is a great falling off compared with the number which it has been necessary to dip in previous years.

Now that our flocks are free from scab or any contagious disease, it is of the utmost importance that all precautions be taken regarding the entry of sheep from other States or Territories. Quarantine regulations can not be too strict in border counties and on railroad lines. One of the worst outbreaks of scab with which we had to contend during the year, and which caused much expense and annoyance, was introduced into Fergus County by a flock of sheep brought from Oregon. These appear to have passed through the State without scab being detected. It was only through the most persistent enforcement of quarantine regulations that the disease was confined to the original flock.

Wool-growers have had a prosperous year, with good demand for all classes of sheep, and sales show a higher price realized than at any time for the past several

years. There has been a good demand for stock sheep, and lambs reached as high as $2.25 per head. Two-year-old wethers moved easily at $3, and in one case $3.20 was paid for a very choice lot. Ewes sold at from $2.75 to $3.50 per head. The wool market opened low, and continued so during the season. Nearly the entire clip of wool was consigned to eastern commission houses, netting the grower from 16½ to 19½ cents per pound.

Climatic conditions to this date have been favorable; sheep throughout the State are in good average condition, and although feed is short, wool-growers generally are fairly well provided with hay, and all indications point to 1891 as a very prosperous year for the industry.

PAST HISTORY AND PROGRESS.

The present development and condition of the sheep industry in Montana are remarkable. The discouragements which beset the early flockmasters, including the original control of the range by cattle kings, compelled the industry to win its way strictly on its own merits. The pioneers in the business deserve considerable credit for demonstrating the adaptability of Montana for sheep raising and overcoming the obstacles which they have encountered.

In consulting the files of the Montana Wool-Grower, the writer found a communication which appeared originally in the Daily Miner, of Butte, in 1886, from the secretary of the Montana Wool-Growers' Association, from which the following extract is taken:

It is believed that the first sheep brought into Montana were owned at the St. Peter's Mission, which was established in 1859, near the mouth of the Sun River. However that might have been, the first authentic statistics are found in the Territorial auditor's report for 1868, which gives the number of sheep and goats in the then nine counties as 1,752, which were assessed at a total valuation of $9,685.50 or about $5.50 per head. One-third of this number was given in by Madison County; while Madison, Deer Lodge, and Meagher counties contained over three-fourths of all.

This industry, in common with most others in the Territory, did not advance very rapidly for the next ten years, but in 1881 there were assessed 260,402, valued for taxation purposes at $729,228.50, average of $2.80.

The sheep that were brought to the Territory, says the Wool-Grower, came from various directions, but mainly from California and Oregon. They were generally a grade Merino, many quite a high grade. Some of the early breeders, however, brought in coarse-wool rams—Cotswold, Southdown and the like from Canada and the Eastern States, producing at the start all grades from coarse to fine, in the larger flocks of the Territory. Since that time large numbers of Merino rams have been used, and the wool now largely grades fine and fine medium in many of these flocks, fully 95 per cent of the wool being of these grades. Of the flocks of the Territory, there are probably very few that are less than half blood, while as a rule, they will run half to full blood Merino.

The following, from the Montana Stockman, differs from the Daily Miner as to the traditional location of the first flock:

Montana's sheep industry has now reached proportions which place it among the main sources of revenue to the State, and the history of its growth forms a chapter in local history which deserves to be placed on record. Current report states that the first flock of sheep ever brought to Montana came from the Pacific coast in the summer of 1867, and were located somewhere in the Prickly Pear Valley, in the present county of Lewis and Clarke. The band comprised about 500 head, and no provision

in the way of shelter or winter feed having been made, the whole outfit perished before the succeeding spring. This unfortunate beginning did not deter further experiment, for in the Territorial auditor's report for the year 1868, we find the first authentic public record of the existence of the industry in Montana. In that document 1,752 head of sheep and goats are recorded as being returned for assessment, at a total valuation of $9,685, or about $5.50 per head, and from that time on sheep husbandry may be considered one of the permanent industries of the State. The first few years were naturally a period of cautious experiment, and the slow advance is evidenced by the fact that the increase in holdings during the nine years succeeding was comparatively small in proportion to the inducements and possibilities for expansion. There was a big margin of profit in the business in those days, but with the natural adaptability of the State to its successful prosecution still in doubt, the industry was slow of growth.

The following table, compiled from the Territorial and State auditor's reports, show the number of sheep assessed in the State for the years named, and indicates the steps by which the industry has attained its present proportions:

Year.	Number.	Year.	Number.
1877	79,288	1884	593,896
1878	107,261	1885	798,682
1879	168,891	1886	968,298
1880	249,978	1887	1,062,141
1881	260,402	1888	1,153,771
1882	362,776	1889	1,368,848
1883	465,667	1890	1,555,116

While these figures are probably in every instance much below the actual number of sheep owned in the State, they approximately indicate the process of development during the years mentioned.

GENERAL FACTS REGARDING THE INDUSTRY.

The class of sheep most numerous in Montana is quite similar to that of other Western States and Territories where sheep are a prominent branch of the animal industry. Montana sheep consists mainly of Merinos, including both Spanish and French, with the former greatly predominating. In the foundation flocks of Montana there is found very little of the trace of Mexican sheep, which is so manifest in most the early flocks southward to the Gulf of Mexico. This difference is a decided advantage, because the sheep here of similar grades to those farther South are larger in size, with better constitutions and heavier fleeces. The foundation of the earliest flocks came mainly from California, to which additions have been made of pure-bred and high-grade sheep from Vermont, New York, Michigan, Wisconsin, and other Eastern States. But the greater portion of the sheep came from the West, and every year thousands more are brought in from Oregon and California, as well as from Idaho and Utah. The sheep from the East now brought in are principally breeding rams, including full-blood Merino, many of the Delaine type, Shropshires, and some coarse wool. At present a good many flockmasters are experimenting with the Down cross,

especially the Shropshire rams. However, the Merino blood predominates and will unquestionably so continue as long as sheep are run in large flocks as at present. These bands number from 1,500 to 3,000, averaging about 2,000 sheep. The number of sheep owned by a single person or firm varies in extent from 1,000 to 50,000. Large holdings of 20,000, 30,000, or 50,000 sheep are not numerous, yet there are one or more such holdings in each of the principal sheep counties. It rarely occurs that a regular sheep-owner has less than 2,000 head, and the very large owners are about as numerous as the smaller ones who each own less than 1,000 head. It is seldom that anyone claiming to be a sheep-owner handles less than the average flock of 2,000 head or more.

The great wealth of grass everywhere prevalent indicates a fertility of soil unusual for this portion of the plains and the Rocky Mountain region. The level and rolling land has a hard, dry soil, either clay or a sandy loam, except in the rougher portions, which are more gravelly; but generally speaking the soil possesses a sandy character very similar to all the land lying on the immediate eastern slope of the Rocky Mountains. However, the Montana portion of this arid grazing land has not so great an altitude as the region south to the Gulf of Mexico. Nearly every county has all grades of soil from the rich bottom and bench lands to the rough or rocky hills or mountains. The diversified topography of the country and the natural feed, everywhere more or less abundant, give an adaptiveness to stock-raising in Montana that accounts for the success attained, notwithstanding the severe winters.

It seems remarkable how well sheep subsist and flourish on the native grasses throughout the entire year. The blue-joint, bunch grass, and what is termed buffalo-grass are common in most counties and are generally mentioned with favor by sheep-owners. But as the subject of Montana grasses is of sufficient importance and extent to require a section of this report it will not be further discussed here. Nature has been kind not alone in the matter of grasses, but in that of other necessary element of live-stock husbandry, the water supply, which is available for stock in most localities in rivers, creeks, lakes, and springs. Along most of the streams there is some timber or brush, especially the Yellowstone river, the cottonwood and willows constituting the principal timber. The growth along these streams, as well as the great variety of so-called "sages," afford considerable feed for stock during the period when snow covers the ground. Fortunately the winter grazing lands are covered with snow for only a short period during the average winter, but occasionally there is a winter in which the snowfall is excessive, and if the flockmaster has not provided a supply of hay or other feed the loss is quite large. There are sheep-owners who still persist that it is useless to provide winter feed because they have managed to get along so far without recourse to hay or grain, and the ranges reserved for winter use seem to them ample for emergencies. While the loss is heavier some winters than others, they claim that it is not equal to the

cost of providing a sufficient amount of hay every year. One experience of heavy and unusual losses, however, seems sufficient to induce them to modify their method, and ever after shelter and feed are annually provided sufficient to sustain the stock through the stormy period.

The loss of sheep from all sources in Montana is so small that it may seem incredible to those unfamiliar with the industry in this State. The loss from the depredations of wild animals is less in comparison than in any of the States or Territories southward in the Rocky Mountain region, or the eastern slope of the same. The estimates of the amount of yearly loss from this source, as reported by the sheep owners, are from one-half to 1 or 2 per cent, although one report from the Yellowstone country placed the loss as high as 10 per cent. Yet after summarizing the reports for the whole State, the annual loss from wild animals does not exceed 1 per cent of the sheep of the State. The annual loss of sheep from exposure and other casualties is very much larger; a conservative estimate for a series of years would place it at 5 per cent, the loss for any one year depending on the severity of the winter. That the loss is not much greater, in view of the primitive methods in vogue for conducting sheep husbandry, is a high tribute to the endurance and constitution of the Montana-raised sheep.

In regard to the effect on the constitution or the fleece of sheep brought in from other States, the general opinion seems to be that the change results in improvement, whether the sheep come from the west, south, or east. The bulk of the sheep hitherto brought in have come from Oregon, Washington, and other States and Territories west; and this class of sheep stand the transition without any perceptible change. But the climate of Montana is so salubrious that the only change noted in the constitution of the animal is that it becomes strengthened and less liable to disease than before. Sheep brought from the south seem to attain greater size at maturity; the fleece becomes more dense, the fiber stronger, and the staple longer. The same is true of sheep brought from the east, being bred more carefully and not accustomed to the "rustling" methods. They do not show any improvement until after they become acclimated, and they usually require more personal attention, but both the fleece and constitution ultimately improve. The fleece becomes drier, more dense, and attains greater length of staple. This is particularly true of the Merino sheep. Of the medium or long-wooled fleece there is no improvement in any way, unless it may be a slight improvement in density. The fleece does not deteriorate if the sheep are well fed. Sheep of all breeds acclimate readily without any bad effects.

The class of rams mainly in use previous to 1890 were full-blood, or grade Merinos, with the Spanish or American type in the lead, and only a fair proportion of the French. Since then there has been a disposition to use rams of the mutton breeds more, but not to the total

exclusion of Merinos. It is rather a partial substitution, and only occasionally has a flockmaster made a complete change from fine-wool to coarse or middle-wool rams. The use of the mutton-breed rams is in the experimental stage yet, and is confined mainly to the Shropshires, although the Cotswolds, Oxford Downs and Southdowns are being used to a more limited extent. Delaine Merino rams have been used a great deal and give very good satisfaction. The most satisfactory cross, so far as tried during the present experimental period, and the one which appears to be growing in popularity with the sheepmen, is the cross of the common Montana ewe with either the pure-bred Shropshire or the Delaine Merino ram. The lambs produced from this cross in nearly every case seem to make the model sheep for Montana, and when the breeding has been judicious, a very profitable animal is the result for both wool and mutton. The great danger which confronts the flockmaster in a new departure from tried methods of breeding is the tendency to breed indiscriminately. How to breed the cross-bred ewes and not produce a mongrel or deterioration of wool, and perhaps an animal unsuited to the climate and the customary methods incident to the management of flocks in Montana, is the problem yet to be solved by most of the sheepmen. Successful cross breeding is an extremely difficult undertaking for any sheep-breeder, and for the inexperienced or unskilled it is a very hazardous business. Already there are manifest ill effects from the indiscriminate use of rams on flocks in different portions of the State, brought about by the eagerness of many flockmasters to secure a large mutton carcass. Some sheep-owners have crossed Merino ewes with Oxford or Cotswold rams, and as might be expected, bad results occurred at lambing time. The sheep of this cross are in many respects unsuited to range grazing, as they do not thrive so well in large flocks and more feed is required for them than for fine-wool sheep. The real danger is the tendency to run into extremes. For the man who has a few sheep only, a cross is all right if judiciously made, but the middle-wool cross is preferable to the long-wool. The thing to be avoided is any radical change, especially with as large flocks as those of Montana. The Merino blood should predominate so long as sheep husbandry is conducted as it is now. Reckless cross breeding will eventuate in a mongrel type, with general deterioration. The rams used by the flockmaster are one year old and upward, and they are kept in use as long as they are able to get the usual number of lambs. Ordinarily at the age of six or eight years their place is supplied by younger ones. Each ram is given from 25 to 75 ewes, the number depending on his age, condition, or breed. The rams are allowed to remain with the ewe flocks from four to six weeks. In the Yellowstone country the ewes are bred as early as November 15, but the common practice is to so breed that the ewe will drop her lamb soon after the 1st of May. The general custom for the State is to turn in the rams soon after the 1st of December and let them run with the flock from

four to six weeks. It is a very rare occurrence for any of the ewes to fail to breed.

The average per cent of lambs raised varies according to the severity of the winter in its effect on the breeding ewes, the character of the weather during the lambing season, and the amount of attention bestowed or the facilities afforded by the flockmaster. In the past the proportion of the lambs dropped which failed to reach maturity has varied from 10 to 20 per cent. The general experience, however, covering the whole State, is that in the different flocks from 75 to 95 per cent of the lambs are raised. For 1890 and 1891 an unusually high per cent of the lambs was raised, even as high as 100 per cent. This may be attributed to the favorable seasons, the large number of twins, and the more extensive use of middle-wool bucks. A conservative estimate of the number of lambs raised in the State will not be less than 87 per cent. Many sheep-owners who have well-managed ranches, with necessary equipment and conveniences, inform the writer that they save and raise as high as 95 per cent of the lambs.

It is a matter of surprise to those unfamiliar with the industry in Montana that the requirement of feed and shelter during winter has been in the past and is at present rather an incident than a regular and necessary provision. It seems incredible that there are very many flocks in the State which are compelled, during extreme winter weather, to depend wholly on the winter ranges for feed, and for shelter on such as nature has provided. There are hundreds of flockmasters who have handled sheep in this manner for years without excessive loss. It seems strange that in this latitude so many sheepmen should make no more provision for food and shelter during winter than do many of the Texas flockmasters, yet it is nevertheless a fact, and the average loss has been about the same. Yet it is the judgment of the prudent and conservative sheep-owners that it is an unwise policy, for the reason that every few years there is likely to occur a winter of unusual severity with heavy snow which may entirely cover the greater portion of the winter range, when great losses are sure to occur. The amount of the loss in these exceptional winters is as much as would have provided permanent sheds and the cost of putting up enough hay to carry the flocks through the severe periods of winter weather. It is only a matter of time when this barbarous custom must become practically obsolete, for one experience of this kind usually satisfies the sheep-owner. Even if he escapes a total loss of the flock he is sure to lose the profits of one or more years' labor. The expense of providing suitable shelter is not large. The ordinary shed, closed on three sides and open to the south, will answer in most cases. Where lumber is not conveniently attainable the roof may be covered with brush or hay. A shed 150 feet square and 7 to 8 feet high in the center will accommodate the average flock. Some prefer the oblong shed to the square one, but which is the better depends entirely upon local circumstances and en-

vironments. It must be remembered, however, that even where shelter and feed are provided they are not needed or intended for constant use during the winter months. They may be regarded as an emergency provision, to be utilized only during a severe winter storm, or when the range is covered with deep snow. Most sheep-owners who have these conveniences usually prefer that the sheep be housed at night in the open corral, which is inclosed by a stockade. During the day the sheep are herded on the winter range and the sheds and feed utilized only when storms are prevalent. The feed provided for such occasions invariably consists of prairie hay, which is highly nutritious. It is seldom that more than forty tons of hay are provided for 1,000 head of sheep. The winter of 1890–'91 was unusually mild, and but little hay was required anywhere in the State. In the localities where it was used the time in all scarcely exceeded two weeks.

Owing to the excellence of Montana ranges it will not be long before they become occupied, and the present unlimited range held by a few individuals will be circumscribed. This will necessitate an increased amount of winter-feeding. The development of the State by irrigation and otherwise will make this so plentiful as to more than compensate for the loss of winter-grazing. While intrenchment upon a portion of the grazing lands now occupied by the sheep-owner may increase his expenses, yet it is the belief of many that as a result of more comfortable shelter and regular feeding during the winter months there will be such a marked improvement in the quantity and quality of the wool and mutton produced as to more than reimburse the added cost of feed and labor. Individual sheepmen who have been favorably situated and disposed to try the experiment of full feeding are so well satisfied with the results that they have no desire to return to the customary methods of wintering sheep. Under that system the sheep-owner aims to dispose of his surplus wethers as well as the weak lambs and aged and other undesirable ewes before winter sets in. They are generally sold to stock-feeders in the grain producing districts farther east or south.

The grazing lands utilized by the sheepmen of Montana are a part of the Government domain, large areas of which are still unsurveyed. The only land owned by the sheepman may be 160 acres, or perhaps more, located where there are water and good hay land. This water right and claim are made his home and winter ranch. During summer the sheep are grazed on more remote ranges, while the home ranch and adjacent range are reserved for winter use. In some cases, within railroad limits, the home ranch is leased from the railroad company. Many of these landholdings have become quite valuable, because of their commanding position of the choicest ranges, or because of the permanent improvements and conveniences. The value of these home ranches is placed at from $1.50 to $10 per acre.

In reference to the main object of sheep-raisers of Montana, there is

a growing disposition to breed for both wool and mutton. Formerly, wool was the sole object, but many flockmasters feel that under existing conditions both are necessary to make the business profitable.

Shearing mostly takes place during the month of June. Some flockmasters shear in the latter part of May and others the first of July, but every fleece is clipped by July 10. A large number of the owners have the shearing done at the home ranch by traveling crews of shearers, who go from ranch to ranch, and who receive an average price of 8 cents per head, board included. The crew of shearers usually numbers from 10 to 12 men. In some cases sheep are driven to the public corrals and shearing stations of the railroad and sheared there. The wool is sacked at once and then taken to the railroad storehouses for storage and shipment. When it is possible, and prices satisfactory, the wool is sold at home, otherwise it is consigned to Eastern commission houses, mainly to Boston, New York, and Philadelphia. This season, however, Chicago received a share of the consignments, but, owing to differential rates made by the "Soo Line" and the Canadian Pacific Railroad, the bulk of the clip goes to Boston, as the rate is but a few cents more per 100 pounds than the rate to Chicago. The grades of wool represent all known Western classes excepting the coarsest, but generally consist of fine, fine medium, and medium; also some coarse. Sheep-owners who express themselves say the best market for wool is Boston; for mutton, Chicago. As a general rule, growers prefer to sell in local markets for spot cash, as they secure the use of money at once, and know what they are to get. If this is not done, through failure to obtain a satisfactory offer, the wool is shipped to be sold on commission. The various expenses incident to such shipment and sale average about 3½ cents to 4 cents per pound. The weight of fleeces ranges from 5 to 10 pounds. While a few very competent men estimate the average for the whole State at 8 pounds, yet the numerous reports from every part of the State from actual experience warrant the writer in placing the average clip for the entire State at 7 pounds per fleece. More sheepmen report their actual average at 8 pounds than those reporting 6 pounds average; so, from a careful compiling of all the reports, 7 pounds may be regarded as a fair average for Montana fleece. Mutton sheep are generally sent to Chicago, but most growers sell to speculators who visit the ranches and take chances on making a bargain. They occasionally fail to make any profit unless they buy in small lots until they secure enough to ship in train loads at reduced rates.

The portion of the flocks disposed of annually is likely to vary in numbers during different years, owing to the changing demand for wethers and stockers. In the eastern counties the per cent is smaller than in the western part of the State, where the business has been conducted longer. The class of sheep disposed of consists mainly of wethers 3 years old and upward, and such ewes and lambs as can be spared. Of these the wethers form the larger part, although last

year a great many stock sheep were sold to speculators in the Dakotas. Many of these were culls or cheap sheep, except among those sold to the owners direct. About 20 to 30 per cent of the entire flocks of the State are now disposed of annually, and are sold after shearing is over. The stock sheep are taken from August to November, and the mutton sheep and wethers from September to November. The stock sheep sold last year went mainly to the Dakotas at prices ranging from $2 to $3.25, a probable average of $2.50 or $2.75. The mutton sheep and wethers sold from 50 cents to $1 a head higher, and netted the owners from $3 to $3.50. Dealers resold them in St. Paul, Minneapolis, or Chicago. The bulk of those fit for slaughter are shipped in car-load lots to Chicago direct, or if the sheep are not in prime condition, they are given a stop-over at some of the feeding stations in Illinois, and finished for the market on grain and then sent on to market and bring the top prices. The gross weight of these muttons runs from 90 to 130 pounds, or an average of not less than 100 pounds. These weights are of sheep sent to market off the grass, and does not include shrinkage incident to the long shipment to Chicago. Grain-fed sheep average higher.

One of the most expensive features of the business in Montana is the comparatively high wages paid herders, who command from $35 to $50 a month and board. The prevailing price is about $40. The average cost per sheep a year, including all expenses, is variously estimated by different sheep-owners of Montana from 25 cents to $1.25, the cost depending on the class of sheep, locality and environments, skill and management. The reports name 50 cents, 75 cents or $1, about evenly divided. The following detailed statement made by Col. David Sellers, of Montana, in 1888, illustrates the basis of calculation and answers the purpose of an outside and conservative calculation:

Investment.

Two thousand stock sheep at $2.25	$4,500
Horses, corrals, stables, etc.	1,500
Twenty-five rams at $15 each	375
	6,375

Annual expenses.

One herder, including board	$600
One man help, including board	600
Two extra men, four months	400
Shearing expenses	200
Freight, taxes, salt, etc.	200
Other expenses	200
	2,200

Income.

Wool, 12,000 pounds, at 18 cents	$2,160
Increase of flock, 40 per cent, at $2.25	1,800
	3,960

After deducting expenses there is a net income of $1,760, or over 27 per cent, on the investment. To keep a less number of sheep would not reduce the expense much, while a few hundred more would not increase the expense. The extra men are necessary during the lambing and haying seasons. The foregoing estimate is of a representative flock well managed, having all the necessary conveniences. Of course there are hundreds of owners who manage their flocks at much less expense than the total amount given by Col. Sellers, which averaged $1.10 per head. The average for the whole State would be from 80 cents to $1 per head for a series of years.

A brief summary of the local advantages for the industry enumerated by sheepmen representing every portion of the State is as follows: Natural sheep country; pure and invigorating atmosphere; free range; abundance of nutritious grasses of different kinds and excellent quality, affording pasturage the year around, excepting a few stormy days of winter; climate dry and healthful; plenty of good water available from natural supply; no disease among sheep, and country almost absolutely free from it; greater portion of State only suitable for grazing, too dry for general farming—sheep and other stock easily fatten without grain, on the native grasses, until they are fit for market; freedom from dust, burrs, and ticks; unlimited open range which can not be profitably utilized for any purpose except grazing.

The chief disadvantages and obstacles encountered by those engaged in the sheep industry of Montana, compiled from their own statements, are as follows: High priced and often incompetent herders and helpers; occasional severe winters, with deep snows, cold storms, and low temperature; localities with scarcity of forage in winter and water in summer; timber scarce except along the principal rivers, making lumber very expensive for those who have to make long hauls for their necessary supply; trouble with poisonous weeds and plants in some places, such as the wild parsnips and loco plants; isolation from social privileges incident to the business. These items comprise all the chief disadvantages mentioned by correspondents in the State, and all of them do not apply to every county. Some minor difficulties are mentioned by some of the flockmasters, but none that can not be overcome by energy, industry, and economy.

Sheep raised in Montana are peculiarly free from disease. There have been some cases of scab in different portions of the State, usually caused by carelessness in bringing the sheep from other localities; but at present it is of very rare occurrence, as the sheepmen are very prompt in stamping out any known case, and the restrictive and effective scab-law enables sheep-owners to promptly eradicate any outbreaks. A sort of catarrh sometimes affects the sheep, and occasionally ticks are complained of, but so infrequent are these cases that they are scarcely ever mentioned.

The sheep industry of Montana is improving daily, and is unquestionably the leading live-stock pursuit of the State. It is prosperous, and the outlook has not been so bright in years. Where the cattle business has declined sheep are rapidly replacing them, and with increased profit to the stockman. The only places where there is a decline are in one or two counties where the range is being bought and fenced, and there the small farmers will handle sheep on a reduced scale, like the general farmer in the older States.

The requirements for profitable sheep husbandry in Montana are to have good sheep, hire good men, and watch both well. Use thoroughbred rams, utilize free range, and provide meadow sufficient to yield 40 to 50 tons of hay per 1,000 sheep. A beginner should start with 1,500 sheep, provide sheds for winter, and during summer change camps often. Give them plenty of salt and water, and attend to the business personally. Profitable sheep husbandry in Montana requires careful and prudent management in every part of the business. Loose and careless work will invite, and usually results in, disaster. With a good location as to range and hay, and a prudent management on business principles, the industry can be made to yield profitable returns.

WHAT THE INDUSTRY REPRESENTS IN NUMBERS AND VALUE.

According to Montana statistics, compiled from the official records of the several counties, the amount of live stock in the State on January 1, 1891, was: Cattle, 649,757; horses, 161,962; sheep, 1,555,116. These were assessed during 1890 for taxation purposes, and while these figures approximate nearer to the actual number than those in the assessment rolls of most of the Western States, yet the natural increase, stock driven or shipped in from other States, and the annual sales on dispersion, are not taken into consideration in these records. Hence they are generally understood to be much less than the actual numbers. Of course every stockman, with the consent of the assessor, pays only his proportionate share of the taxes, and no more if he can help it.

The number and value of Montana live stock, according to the Statistician of the U. S. Department of Agriculture, on January 1, 1891, was: Cattle, 966,702, value, $15,216,716; horses, 151,547, value, $5,978,527; and sheep, 2,089,337, value, $4,948,595, an average price per sheep of $2.37, which is 7 cents less per head than the average assessed value for 1891.

The following statement shows the number of sheep and the assessed value of the same in the several counties in Montana for the year 1891, as returned to the State board of equalization by the assessor of each county:

County.	Number of sheep.	Average assessed value per head.	Total assessed value.
Dawson	77,479	$2.50	$193,697
Custer	125,723	2.99	377,006
Yellowstone	115,845	3.50	405,809
Park	97,396	2.52	245,990
Gallatin	6,658	2.54	16,920
Meagher	259,740	2.45	648,315
Jefferson	3,034	2.50	7,585
Lewis and Clarke	40,387	2.28	92,110
Deer Lodge	36,000	1.80	65,320
Missoula	8,604	1.66	14,295
Fergus	299,565	2.51	754,725
Choteau	291,713	2.25	656,354
Cascade	94,301	2.24	211,318
Madison	12,942	2.36	30,675
Beaverhead	45,370	2.49	113,374
Silverbow	No return.	No return.	No return.
Total	1,514,847	2.44	3,833,583

Last year (1890) the cattle shipments east were 108,000 head, which was more than usual; while, on the other hand, there was a decided falling off of southern cattle brought in, the number being only 63,037.

In order to have a reliable basis for a correct statement of numbers and values, a special report was secured covering some of the representative sheep counties of the State, of which the following is a brief digest:

In Custer County the number of sheep and lambs for the present year (1891) is 235,000, with an average value after shearing of $2.75; ewes, $2.50, and wethers, $3. From 150 to 200 men in the county are engaged in sheep-raising, having bands of from 1,200 to 2,500 sheep. The average investment of each sheep owner outside of his sheep, in the way of ranch properties, is from $1,500 to $2,500. The industry is more firmly established than ever, and the owners make better provision for winter.

Meagher County has this year 340,000 sheep, one-third wethers and two-thirds ewes. The value of wethers is $3 each, ewes $2.50, and lambs $1.50 to $1.75. In 1890 the assessor reported 63 individuals or firms owning sheep in the county, and this year 70 sheep-owners. The sheep represent about 40 per cent of the capital invested in the business. Fifty thousand sheep were shipped out of this county in 1890. The stockers went to the Dakotas, netting the owners here $2.50 to $2.75, the wethers averaging $3 to $3.75. Cattle are gradually giving way to sheep in this county.

Dawson County has over 75,000 sheep, not counting lambs, valued at $3 each. The bands range in size from 1,500 to 5,000, and not an unhealthy flock in the county. The sheep industry is yet in its infancy, being about four years since the first sheep were brought into this

county. The industry is in a very prosperous condition. The sheep are strong and thrifty, and the wool staple of good length and strength.

Fergus County has 340,000 sheep, consisting of 150,000 ewes, 85,000 wethers, and 105,000 lambs, with a total present value of $900,000. Two hundred firms or individuals are engaged in sheep husbandry, owning respectively all the way from 1,200 to 30,000, the range of extreme holdings. The ranch properties, exclusive of sheep, are valued from $1,500 to $30,000, or an average of $4,500. The most notable change apparent in the business is the discarding of the fine grades of Merino, and breeding for medium wool and mutton. Forty thousand sheep shipped out of this county during 1890 to Chicago and the Dakotas netted the owners here from $2.25 to $3 per head.

Now, by comparing the actual number of sheep in a few counties with the numbers reported for taxation purposes for 1891, it is found that it is necessary to add almost exactly 33⅓ per cent to the number reported by the assessors to equal the actual number. On this basis of estimation there were on January 1, 1891, 2,019,796 sheep in Montana, which, with the increase of the present year (1891) of 40 per cent, 807,918 head, would make a grand total of 2,827,714 sheep, valued at $8,776,212. The wool clip of 1891, which was 14,138,572 pounds, netted the growers $2,356,428. To this number of sheep and the wool add other property belonging to the sheep industry as an essential part, which a low careful estimate would place at least $9,000,000.

To recapitulate what the sheep industry of Montana represents in numbers and values for 1891: 2,827,714 sheep, value $8,776,212; 14,138,572 pounds of wool which net $2,356,428, and property of sheep-owners other than sheep, at $9,000,000, gives a grand total of $20,132,640. Thus the sheep industry of Montana represents in round numbers the sum of $20,000,000, as one of the resources of this young State for 1891.

THE INDUSTRY AS VIEWED BY THE STATE VETERINARIAN, HERBERT HOLLOWAY, V. S.

Over two-thirds of the surface of the State of Montana is suitable for the purpose of grazing sheep. Foothills, rolling prairies, and fertile valleys afford water courses, sheltered feeding grounds, and fine locations for home ranches.

The natural consequence of this is that the industry has grown in twenty-five years from absolutely nothing into one of magnificent proportions. In round numbers 2,000,000 sheep now feed upon Montana ranges, and this year (1891) over 12,000,000 pounds of wool were shipped, as the annual clip, to eastern markets. A brief glance at the history of the first introduction of sheep into the State, and a description of what the Montana sheep is, as it has been bred up to, will be of interest.

To the early Jesuit fathers must be given the credit of making the first importation of sheep into what is now the State of Montana. In

1866 about 450 head were driven from Oregon over the old Mullen wagon road to the St. Peter's Mission, near the Missouri, where they were kept for several years with varying success. The band was composed of breeding ewes, and was brought in for experimental purposes. About 1876 the industry was put on a firm footing; large importations were made from California, Oregon, Washington, and Utah, and in 1880 many bands were permanently located.

The winter of 1880 and 1881 being very severe, the losses were exceptionally heavy, and the industry was given a blow from which it required several years to recover. Since then the business has advanced rapidly and upon a sound safe basis.

The first importations of sheep were principally of the coarser breeds of Cotswolds, particularly those brought from Oregon and Washington. The California sheep were of much finer grades and decidedly smaller. The wool-growers were quick to detect the breeds not adapted to this climate. The fine, greasy, wrinkly, light-boned, Spanish Merinos were at once condemned as unfit to stand the rigors of our winters, and on the other hand the large, leggy, coarse, open-fleeced Cotswolds had the fatal defect of light fleeces and were not well adapted to grazing in large bands. French Merinos, Shropshires, and Southdowns were experimented with until now the Montana wool-growers have nearly succeeded in producing a distinct class of sheep that possess the good qualities of all the others and the defects have been greatly overcome. Generally speaking, there is not a wool-grower in Montana who is breeding to-day to one distinct breed of sheep, but they are breeding the Spanish Merino on the Cotswold ewe; then a French Merino grade (half-blood) on that; then the Shropshire on that grade, and are producing a sheep that has size, strength, and constitution, and a medium wool averaging from 6½ to 7½ pounds per fleece.

As the mutton market is continually improving and ready sales of mutton sheep are easily made, it is quite probable that a slightly larger, coarser grade, that will mature early, will be bred from that which is now used.

As a civilizing and reclaiming factor the sheepmen have a prominent place in the history of the State. In the first place the shepherd necessarily must keep in advance of populous settlements. He requires numbers of men for lambing, haying, herding, etc. Buildings must be erected, goods and machinery must be shipped in, and in fact the greater part of the money received for the clip is expended in the neighborhood of the ranch during the year.

Up to a certain point the presence of sheep is therefore a blessing. It can become an evil, however, as it has in some communities. It is a well known fact that sheep drive cattle and horses from the ranges, as these latter animals have a decided repugnance to feed upon pastures trampled by sheep. In connection with this "trampling" it may be remarked that much injury is done to pastures in dry weather, the

cutting done by the sharp feet of the sheep exposing the grass roots to the sun's rays. This, together with the fact that sheep eat the grasses so much closer to the roots than horses and cattle, is the reason why sheep "kill out" a range so rapidly.

Certain counties of the State are known as sheep counties, being almost monopolized by wool-growers. This is carried to extremes in some places. Large companies, having become rich and powerful, have bought or "frozen out" small ranchers, corralled the streams for many miles, and by so doing have practically shut out settlers from very large tracts of country. This is a great and growing evil, which threatens to lead to serious complications of many kinds in the near future. This plan of procedure is at variance with the best interests of the State, and is bound to become the subject of remonstrance from the people and subsequent legislation or restriction of some kind.

Sheep are particularly free from diseases of all kinds, the dry soil and dry atmosphere being a safeguard against the majority of sheep diseases. "Scab" is the only notable ailment with which they are afflicted, but owing to excellent laws rigidly enforced by an inspector in each sheep county there is very little in existence in the State to-day.

GRASSES OF MONTANA.

[Prepared especially for this report by Rev. F. D. Kelsey, Sc. D., Helena, Mont.]

Montana is a State of such vast extent and diversity of formation that the most casual observer would expect a large number of species of plants to be found in the State, whose territory is nearly two and a half times as large as all New England, and whose lands are immensely more broken up into plains and mountains, meadows and valleys. Eastern and northern Montana is one vast prairie of matchless fields for grazing, while western and southern Montana contains several systems of mountains and river supplies, each rich in minerals within, and with grazing wealth upon them.

The botany of this vast extent of country, with its marvelous diversities of conditions, has had but partial study, nor has any systematic survey of the whole ever been made. Three or four local botanists have worked up the matter in spots, but what are so few workers among so many things that ought to be studied? Our State botany has as yet never been edited by anyone. In reports of various kinds, in articles like the present one, the field has been partially gone over. Meanwhile in herbaria at Harvard, Yale, Columbia, Washington, California State University, Missouri Botanical Gardens, also in private herbaria of such men as Messrs. Canby, Rushby, Scribner, Brandegee, E. L. Greene, N. L. Britton, F. W. Anderson, R. S. Williams, Dr. J. H. Oyster, and the writer, much valuable material is preserved that needs careful and critical examination and editing.

Dr. F. W. Anderson, formerly of Great Falls, Mont., and myself have worked together and compared our results, and on the subject of our

native grasses I find we have already tabulated one hundred and three species. Our principal work has been with Great Falls and Helena as centers of circles, with a diameter say of 50 miles, together with excursions occasionally made to more distant points. But could we give our attention to the extensive plains of eastern Montana, the water courses running northward and emptying into the Yellowstone, or the rich and distant flora of the Bitter Root Mountains and the Flathead Reservation, we could increase our list very materially. Yet, for the purposes of this article, our experience is such that our list undoubtedly includes the principal forage grasses. Dr. Anderson has already made a valuable report to the Government, which published his results in the report for 1888.

One of the best grasses of Montana for sheep is what is called "grama," or "gramma" (*Bouteloua oligostachya*). A very good illustration of this grass when luxuriant, and as it grows in the south land, is found in Plate XLI, of "Grasses of the Southwest," by Dr. Geo. Vasey, Botanist of the U. S. Department of Agriculture. With us the grass averages say 8 inches in height and has one or two spikes of flowers. Yet in favorable places ours will grow to 18 inches. It loves dry, arid plains; the whole plant above ground is rich in food material, eatable by cattle, horses, and sheep close to the ground. The ripened seeds are numerous and valuable. In all stages of its growth and maturity, even after our hot summer suns have cured it standing on the plains, and until the winter snows have covered it so that cattle, horses, and sheep have to "rustle" to reach it, this grass is a treasure of inestimable value. There is no waste to it. As a grass to cultivate, this native Western plant calls upon Americans to try its virtues which have proven so rich for buffalo, cattle, and sheep. Dr. Geo. Vasey, in his valuable work on "The Agricultural Grasses and Forage Plants of the United States," gives a very natural picture of this estimable grass in Plate LXII.

Along side of the Boutelouas in value for sheep, must be placed our several varieties of Poa, of which we have in Montana ten species: *Poa andina*, *P. cenicia*, *P. Cusickii* Vasey, *P. Californica*, *P. lævis*, *P. nemoralis*, *P. Nevadensis* var. *glauca* Scribner, *P. pratensis*, *P. serotina*, and *P. tenuifolia*. All these are of great value to the grazing industry of the country. The taller varieties would well repay cultivation, but all of them grow in such manner as to be especially valuable as forage plants, and yield themselves without any waste whatever. *P. andina*, *P. Californica*, and *P. tenuifolia* are especially valuable to the sheep industry. Go where one will in Montana, from the damp meadows of the streams to the high bench lands and the plains, even to the peaks of lofty mountains, and he is ever greeted by these welcome Poas, which like the gramma grasses, are eaten by sheep without any waste.

Mingled with the Poas is to be found the "June grass" (*Kœleria cristata*), and like them is nutritious, delicate, and agreeable in its en-

tirety, having no waste. It is also an abundant grass. Our average height in Montana is about a foot. It is found everywhere in this State.

Another of Montana's sources of wealth lies in her rich, nutritious *Agropyrums*, of which we have seven species, viz: *A. caninum*, *A. divergens*, *A. glaucum*, *A. repens*, *A. strigosum* (Beauv.), *A. tenerum*, and *A. violaceum*. These grasses tend to grow tall and thus are richer food for cattle than for sheep, but sheep never pass them by, as they are storehouses of nutriment very acceptable. Our July and August suns cure them as they stand, and thus they become the forage of hungry cattle all winter long. No more valuable hay can be found the whole country over than this natural product of Montana—covering her hills and mountains with fatness. A traveler is often heard inquiring with utter astonishment: "What can those cattle find to eat up there on those dry and barren hills?" The botanist would quickly reply: "Sir, those cattle are feeding on the most nutritious hay to be found on the American continent; they are feeding on Poas, Agropyrums, Bouteluas, and other grasses sun-cured into hay, uncut and in most excellent condition." No more common remark is ever heard upon our railroad trains than the expression of wonder at what the cattle and sheep find upon our apparently bare and bleak hills and benches and plains. Most of these grasses do not form a continuous sod, as they do in a heaven-watered land; hence the name "bunch grass," which is a meant ingless term so far as distinguishing the species is concerned, buwhich well describes the prevailing tendencies of all our grasses. The soil therefore shows through the grass, and so gives to our landscape a grayish tint as one looks out upon it. We miss that delightfully rich green tint of a New England or a Southern landscape. But the grasses themselves seem to have more nutriment in them than our Eastern grasses.

Omission must not be made of the various Stipas among our valuable bunch grasses. These Stipas have a long, objectionable, stiff awn, and a sharp-pointed stipe at the base of the flower. Three species are abundant, namely: *Stipa comata*, *S. spartea*, and *S. viridula*. The sharp stipe, assisted by the three to five or more times twisted awn, works its way into the hides of sheep and forms sores of a serious nature. This is especially true of *Stipa spartea*, which is a coarse and not a valuable grass when one considers the dangerous awn and stipes, which have been styled far more appropriately than is usual with popular names, "Devil's darning needle." Fortunately it is not an abundant grass. The other two Stipas are rich, valuable and abundant, S. *viridula* being of especial value for its juicy root and base leaves and the nutritious ripe seeds; while *Stipa comata* is especially valuable on our plains, being hardy, and the clustered base leaves very acceptable to all grazing animals. *Stipa viridula* has no objectionable feature at all, and fortunately is quite abundant on good soil. A good illustration of its panicle is found in Dr. Vasey's "The Agricultural Grasses, etc.," Plate

XXXVII. It gives every promise of encouragement for a good plant to cultivate in arid regions.

Of the Festucas we have three, *F. tenella*, *F. ovina* and *F. scabrella*. *Festuca ovina* is especially a grass for sheep, being called "Sheep's Fescue." (A fine illustration of it is given in Plate LXXXII, of Dr. Vasey's "Agricultural Grasses," etc.) The fine, short leaves clustered at the base, show it to be especially adapted to sheep.

Eatonia obtusata, var. *robusta*, is also abundant in Montana, and one of our valuable grasses for hay or for grazing.

The celebrated "buffalo grass" (*Buchloë dactyloides*) has been reported from Montana; but the grass is either very scarce or unimportant, or those reporting it have been mistaken. The botanist now on the field has never seen it in Montana.

We sometimes meet with *Danthonia Californica*, and its variety *unispicata*, also *D. intermedia*. Also several species of *Deyeuxia;* also *Phleum alpinum*; several species of *Agrostis*, *Ammophila longifolia*, *Munroa squarrosa*, several species of *Bromus* and *Elymus*. *Oryzopsis cuspidata* is fairly abundant, and wherever found is very highly prized as a grass for animals of all kinds. It has no objectionable quality, and many characters which place it in the highest ranks as a valuable forage plant. It also has this in its favor that it grows luxuriantly in very poor soil.

The grasses above mentioned are our chief grasses. Some of those of minor importance are *Beckmannia erucæformis*, *Spartina cynosuroides*, *Phalaris arundinacea*, *Alopecurus pratensis*, var. *alpestris*, a very valuable grass; *Cœtabrosa aquatica*, *Distichlis maritima* and its variety *stricta*, several species of *Glyceria*, *Hordeum jubatum* and *H. nodosum*, *Setaria viridis*.

Besides these grasses a few of the Carices are eaten by cattle and by sheep, though they can not be looked upon with much favor as food.

Our plains will be found decked as a general thing in the following grasses: *Poa tenuifolia*, *Bouteloua oligostachya*, *Stipa comata* and *viridula*, *Kœleria cristata*, *Agropyrum glaucum*, *Hordeum jubatum*, and *Eatonia obtusata*, var *robusta*.

On the mountain slopes will be found several *Poas*, *Agropyrums*, *Festucas*, *Oryzopsis*, *Stipas*, *Danthonia*, *Phleum alpina*.

Sheep, horses, and cattle can graze on our hills, mountains, and plains the year round; in summer on the rich, juicy, green grasses, and in winter on the sun-cured, natural hay, standing where it grew. As the country fills up with a greater populace these natural ranges will prove less adequate to the demands made upon them; but these native grasses contain in themselves the potency of vast wealth to this great State whose extensive plains will one day be well watered from reservoirs built to retain the waters that now are allowed to flow off in the spring and June freshets. Then the land will yield her fatness in a way that will astonish all concerned and change the landscape from its grey tints to an English green and make of Montana a center of agri-

cultural and pastoral wealth. Nor need we import any foreign or cultivated grasses, for our own native grasses are the best adapted to this land and are of superior inherent qualities.

MONTANA SHEEP LAWS.

The manifest importance of the sheep industry, its high rank in the essential resources of the State, has made it possible for the sheep-raisers, through concentrated action, to obtain whatever statutory provisions are necessary for the comfort, encouragement or protection of the industry. The favorable laws which Montana flockmasters enjoy are unequaled by those of any other Western State, relieving them of burdens which the sheepmen in other States have to bear unaided.

From a recent pamphlet compiled by S. A. Balliet, of Helena, and entitled "Statutory Laws of the State of Montana, pertaining to sheep and infectious diseases thereof," sections of the compiled statutes of the criminal and general laws of Montana comprise provisions indexed as follows:

Driving stock from range; poisoning domestic animals; cruelty to animals; marking or branding property of another; cutting off ears of cow, etc.; skinning dead animals without consent of owner; carrying disease among sheep; certain property exempt from taxation; pedigree; cattle or sheep driven must be branded or marked; duty of Territorial veterinary surgeon to inspect quarantined sheep; duty of owner of such sheep; tax to be levied; importation from infected districts prohibited; owners to report diseased sheep; report of surgeon; assistants; laws repealed; takes effect June 1, 1887; rams and he-goats, when not to run at large; penalty; damages may be recovered; diseased animals not to run at large; making false pedigree punished; misrepresenting pedigree punished; recovery of damages done by animals; tax for fund; information of disease to be furnished surgeon; veterinary surgeon and deputies; appointment of deputy inspector; deputy must reside where oath of; deputy, duties of; quarantine; sheep coming into Territory; governor to schedule by proclamation other States where disease exists; penalty for bringing sheep from prescribed districts; shipper must notify inspector; sheep not inspected not to pass over public highway or near range; scabby sheep not to be removed from one county to another; penalty for failure to report diseased sheep; compensation of inspector; report of deputy inspector; records of deputy inspector; penalty for disregarding orders of inspector; penalty for bringing diseased sheep into the Territory; exemptions, none on execution, to enforce certain judgments; additional inspectors; repealing laws; railroads' liability for damage to stock.

For the conviction of any of the laws named, severe penalties, consisting of heavy fines or imprisonment, or both, sufficient to cause a rigid enforcement of the same.

In addition to the foregoing, the State passed a bounty law for wild animals killed: For mountain lions and bears, $5; wolves, coyotes, $2; wildcat, bobcat, lynx, $1.

PERSONAL EXPERIENCE, COMMENTS, AND OBSERVATIONS.

The following paragraphs, constituting the closing pages of this report, merit a careful perusal, as they cover a wide range of matters pertaining to the sheep industry of Montana. They comprise important facts relating to successful sheep husbandry, and are especially valua-

ble, as the writers are qualified to speak from personal experience in the business, or from having been long identified and familiar with it.

Bottle & Bradley, Chico, Park County:

Sheep should have salt every two weeks. They should be fed sulphur with their salt through July and August, as the sulphur helps to keep ticks off, and make the sheep healthy. They should also be dipped once a year, as it aids the growth of wool, and is a preventive for ticks and scab. We use tobacco for dip, but most of the sheepmen use sulphur and lime.

C. W. Cook, Unity, Meagher County:

In general there are no "bad lands" in this county. The number of barren ewes in a band depends largely on management, and on the weather in December, as sheep losing flesh will not "come in." We have but few diseases, in fact no general disease, except scab, which was very detrimental to the industry until the law gave us protection.

Thomas Kent, Big Timber, Park County:

There are about 52,000 sheep on the Crow Indian Reservation. Milo Collins is the only Indian owning sheep on this reserve. The Indians could do well with sheep if the agent or interpreters would encourage them, but instead they seem opposed to doing so.

N. C. Brockway, Musselshell, Yellowstone County:

The sheep industry is progressing in this part of the country, but as the ranges become stocked to their full capacity, we shall be obliged to pay more attention to raising hay and to winter feeding. At present we often winter sheep with no hay whatever, but I think more hay and better shelter would produce better returns.

Robert J. Martin, Billings, Yellowstone County:

Nine years' experience in the county has fully satisfied me that it is always best to have forty tons of hay for each 1,000 sheep, as security through the winter. With a good shed and open water you are well situated for business.

D. H. Bowman, Miles City, Custer County:

The outlook is brighter for the sheepmen this year than for years past. There has been a tendency among some of our sheepmen to breed to the coarse wools, such as Oxfords and Shropshires, but I do not think it a success.

W. W. Beasley, Rosebud, Custer County:

We have a splendid sheep country, dry climate and no rain in winter, dry snow, and we don't require feed unless the snow gets over twelve inches deep. We do not feed any more than five weeks. There is probably one-tenth of our breeders that are using coarse-wool bucks to increase the size of the sheep, but as we are a wool-growing country, our mutton sheep are the best Western sheep that go to Chicago. I am a large shipper of mutton from here. They average in Chicago about 110 to 115 pounds.

J. H. Rice, Fort Benton, Choteau County:

I have every reason to believe that the sheep industry in Montana is to-day on a firm and profitable basis. I know of no instance, after a twelve years' acquaintance with the country, where failure has occurred, provided the party or parties had capital enough to start in proper shape. And we have numerous instances where men are to-day prosperous and independent, who a few years since were getting their start under the share system.

David Hilger, Christina, Fergus County:

The sheep business of Montana is one of the most profitable and safest of any stock investment that can be engaged in. It requires good judgment and experience to manage it successfully. One man makes from 20 to 35 per cent on his investment, while his neighbor may lose money.

John S. Sharp, Glendive, Dawson County:

The outlook for the sheep industry is fairly good. We cannot produce wool alone for the present prices, but wool and mutton at present prices make the business reasonably profitable as long as we have free range.

Sabine E. Grindall, Glendive, Dawson County:

My experience is of short duration, but I think there is no better place in the United States to raise sheep. The ground being very dry, we never have foot-rot. Not having much snow, the sheep can feed some every day in the winter.

Sears & Davidson, Tokna, Dawson County:

There are probably 20,000 head of sheep within 50 miles of us here, most of which have come in within two or three years. They are mostly let out on shares to ranchmen who have no capital; terms, one-half wool, one-half increase; let on three years' time, lessor and lessee paying one-half of taxes each. Most sheepmen make money. If sheep-raising is conducted aright there is good money in the business, more so than in horses or cattle.

E. C. Crosby, Meyersburg, Park County:

We keep our sheep in sheds in winter during the night, and feed them on the range during the day, except in severe storms, when we feed hay. A good strong band of sheep usually winter well by being fed from 10 to 30 days during the winter, but lambs should be fed much more than old sheep, say from 30 to 90 days. Hay only is fed. Until the past few years wool was our whole object, as there was no market for mutton except a small local one; but since we have railroads and can ship mutton to Eastern markets, it has grown to be fully as much of an object as wool, and rams of the mutton breeds are taking the place of Merino rams in many herds.

James Davidson, Stacy, Custer County:

The sheep business has had to contend with the prejudice of the people against it, and those who are engaged in cattle raising have in some cases encouraged their cowboys to drive and destroy the sheepmen's property, such as burning their hay and sheds and killing their sheep, and beating, abusing, and sometimes shooting the shepherds, who are without any defense. This prejudice is so great against the sheepmen that to be a sheepman is to be ostracised from society in some places, and few people dare to be so bold as to face the prejudice which is founded on the false idea that the business is debasing, and that sheep injure the range permanently, which is a mistake. The people who come from Texas or Missouri are not familiar with the business, but those who come here from California, or the Western men and the Scotch people have been very successful in the business.

Paris Gibson, Great Falls, Cascade County:

Be well prepared with shelter and feed. Hay may not be required during a period of several years, but occasionally there is a winter when for a month or more the snow is deep and the weather exceedingly cold. At such times the flockmaster without hay and proper shelter is likely to sustain great losses. The memorable winters of 1880 and 1881 taught the wool-growers of Montana that they must always be pre-

pared for snow and extreme cold. The ranges in Montana are free from burrs and generally well covered with grass. Our wool, therefore, when opened in market is clean and very attractive. The quality of wool from our well-bred flocks is unrivaled by any wool in the United States, and it is far superior to range wool produced elsewhere between the Mississippi and the Pacific Ocean.

Montana Husbandman, White Sulphur Springs:

We would repeat our old admonition to wool-growers in regard to disposing of their wool, to establish a rule and be governed accordingly; that is, if they have established a rule to sell at home, to follow that plan year in and year out. But if, on the contrary, they have established a rule to ship, they should follow that just as resolutely. As to which is best we are unable to say. For the past few years the shippers have had the worst of it, but only a few years previous there was a decided advantage in shipping. Hence, in summing up the results of ten years it is difficult to say which has proven best.

The Northwestern Farmer and Breeder, St. Paul, Minn.:

Bunch grass grows in clumps varying from 1 to 3 feet high. The leaves are long and slender, growing numerously from the middle and lower part of the stem; but at the bottom no leaves occur, only dry without sheaths. The top or panicle is very open and much branched, and from the tops of the very numerous slender branchlets grow the hard, nut-like flowers and seeds. The seeds are very nutritious (as good as oats) and greatly relished by stock. This grass grows up early in season and may be found in a comparatively green state late in the fall, long after the seeds have ripened and fallen off. It flourishes best in sandy soil, where its long, fibrous roots draw up the moisture. Bunch grass is exceedingly nutritious, and will grow in what is considered the poorest soil.

Extract from a paper on "Montana Wool," by H. M. Martin, in 1883:

The grades of wool which are now in best demand, and which are likely to be for years to come, are fine and fine medium staple and fine and fine medium clothing. The term staple includes both combing and delaine, but not in this connection do I apply it to the very coarse, long combing wools. Get rid of your very coarse sheep and breed for the above staple and quality, and you will hit the requirements of the market almost every year. Now and then coarse wools will have a turn, as they did in 1879 and 1880, but these will be the exceptions, and even at such times the grades here recommended will sell. The proper methods of mixing bloods so as to obtain the above grades and staple are questions for practical sheep-breeders to determine. Depend upon it, if growers will take proper care to produce wool answering the requirements of the above grades, as explained, and will pay proper attention and personally see that their wools are carefully tied up and packed, they will add to the good reputation already so well begun, and keep Montana wools where they belong.

L. W. Peck, Fort Benton, in an address to Montana wool-growers in 1883, says:

If we wish to improve our business we must keep exact records in regard to what we are doing. We do not appreciate now the vast importance that carefully collected statistics in regard to matters connected with feeding, summer and winter management, bucking, lambing, shearing, and many other matters would have for our industry if they could be collected and published. They would not only give great satisfaction to us as showing just what we had done in years gone by, but would be far more profitable than we now realize in giving us points upon which to improve. In such matters a record is what we want, and not merely memory of what took place a year or two ago. No one can say that we do not, as individuals, put energy and intelligence into our work. We have a wool already that is a favorite in the

market—a light medium wool, which, when scoured, has a soft, glossy texture that is much sought after by manufacturers. If we will put some of this energy and intelligence into concerted action, I will boldly assert that in ten or fifteen years we shall find our wools quoted at figures abreast with the best Australian, and far ahead of other domestic wools produced from large herds, either upon the Rocky Mountain slopes or the Pacific coast.

Rev. F. D. Kelsey, Sc. D., Helena:

Montana is no dry and dreary waste of desert. Few lands can show such a variety in grasses or greater value in her species. From three to five acres of our native grasses are sufficient to support a horse or ox for a year; one acre supports a sheep. Some people tell us our grazing industry has reached its limit, whereas the fact is we have but began. It would be a grand help to Montana if she could do for the State what the United States Government is now doing for the grasses of the Southwest, namely, issue volumes containing accurate drawings of each of our grasses, together with a scientific description of them. Botany has too often been looked upon as a school-girl's play, instead of the noble and profitable and necessary science it really is. Botany is growing daily more and more into prominence as an economical science affecting the wealth of the country. One of the most valuable exhibits Montana could possibly make at the great Columbian Fair in Chicago would be a large collection of her native grasses on which once fed the fat hosts of buffalo, and which now support the herds and flocks that annually bring many millions of dollars into our rising and noble State. Other States may boast of their oranges, plums, and cherries, but few fruit-growers gather in profits at a larger per cent than men who deal in hay, grain and grass. Montana mines are justly our pride and boast; but let it not be forgotten that, to the average wage-earner, Montana grasses are surer and more safe returns than stocks and dividends in the mines and smelters. The tendency of men in all professions, trades, and industries is to follow in the beaten track. Happy the man of brains who experiments and introduces new processes or new values. A rich field for easy investigation lies open to an intelligent and progressive ranchman or farmer to try experiments upon our native grasses. As cotton, corn, wheat, oats, barley, flax, potatoes, tomatoes, beans, peas, pumpkins and all sorts of cultivated grasses were once wild, insignificant weeds until some progressive and aggressive cultivator experimented upon them and discovered their worth, so many Montana plants await the right man to bring them into notice and vantage ground of blessing.

NORTH DAKOTA.

The young State of North Dakota, with a population of a little less than 200,000 people, and one of the last of the Western States to become interested in sheep husbandry, has recently attained great prominence because of the rapid development of this industry, and promises to soon rank among the mutton and wool producing States of the Northwest. Next to wheat-raising live-stock husbandry has been the chief pursuit of the farmers. Sheep-raising, however, has taken tremendous strides in comparison with other branches of the animal industry, and within three years has advanced from the least in number to the greatest. In fact, at the present time, sheep equal in number the total of all other classes of live stock.

The basis of all wealth and prosperity in North Dakota is agriculture, diversified as much as possible, and sustained by its abundant grasses for live stock. Its farmers now recognize the importance of

this fact and are disposed to encourage and to actively aid in the development of any new industry of the State. The farmers have demonstrated to their own satisfaction that general prosperity can not be secured by exclusive wheat-raising, hence are favorably disposed to pay more attention to live-stock husbandry as an important factor in general farming.

In regard to the topography of North Dakota, with its area of 70,195 square miles, the country may be described as a prairie, nearly level in the eastern part of the State, gradually rising in the central part toward the west, and in the western part much diversified by ranges or hills and picturesque buttes. The Missouri River traverses the State for a distance of about 350 miles. Its principal tributary is the Cheyenne, which has a course of about 300 miles within the State. The Red River of the North forms the boundary between North Dakota and Minnesota for 200 miles. The James River heads in North Dakota and flows south into South Dakota. Its course in North Dakota is about 225 miles. There are numerous smaller streams and a large number of lakes and ponds. The largest body of water is Devil's Lake, in the central part of the State, which has a length of about 50 miles by a width of from 2 to 6 miles, with a very irregular outline. Its waters are strongly impregnated with mineral salts, and it has no outlet. As a general rule the eastern part of the State is best adapted to the raising of wheat and other small grains, the central part to mixed farming, and the western part to stock-raising. There are, of course, exceptions to this general rule. Many fine stock farms are found in the Red River Valley, and many excellent grain farms in the central and western parts of the State; but the person who makes stock-raising a special industry, and is in search of cheap lands, will naturally prefer the regions less densely settled than the comparatively populous eastern portion of the State. While there is considerable variety in the character of the soil in regard to its depth and its producing qualities, it may be truthfully said that there are no waste lands in any part of the State. Wherever any considerable areas are found, which by reason of the broken and hilly character of the surface are unfit for agriculture, they will be found excellent for pasturage. In fact the whole surface of North Dakota was formerly covered with highly nutritious grasses, which supported vast herds of buffalo. The prairie grasses predominate in the eastern, and yield gradually to the buffalo and bunch grasses in the western part of the State. Ample experience with cattle, sheep, and horses has proven that climate and natural pasturage combine in North Dakota to give the best results in stock-raising. The success of the older wheat farms has given to North Dakota its reputation throughout the East. It is still one of the greatest wheat-producing States in the Union, and has the soil and climate to maintain its reputation as such. In recent years, however, stock-raising has become an important and constantly-growing industry. At the rate at which the sheep in-

dustry is now extending in the State it is apparent that in a few years North Dakota will take rank among the great wool-growing States of the Union.

In the eastern part of the State, and especially in the rich Red River country, sheep husbandry is becoming quite an adjunct to general farming. There lambs and mutton are the main objects of the sheep-raiser, with wool a secondary matter. Sheep-raising is not likely to be followed there on an extensive scale, but the farmer will find profit in a band of sheep sufficient to cleanse and fertilize his land and utilize his coarse feed, which ordinarily goes to waste. Further west sheep-raising has become more of a leading pursuit. Many stockmen will no doubt make it an exclusive business, and what is sometimes denominated the Montana idea, or more correctly the western idea of sheep husbandry—raising sheep for both wool and mutton—will be the aim of practical flockmasters.

The greater part of the area of North Dakota properly comes under what is known as the western range country. A correspondent, in discussing the subject of the adaptability of this country for sheep-raising in preference to other stock, well says:

> It is a noted fact that there is far less alarm over the prospect of short winter feed among sheep-owners than any other class of stockmen. The reason of this is that sheep thrive on very short feed, and where there are any places bare along our foothills flocks may be kept fairly well, even if the grass has been closely grazed in summer. It is also a fact that it is possible to keep three or four thousand sheep on hay about as easily as to keep so many hundred cattle. Sheep do not seem to consume food in proportion to cattle. This is probably due to the fact that they are constantly rustling for themselves throughout each day, except when it is storming, while cattle having no herder are inclined to lie around the premises and not to go out to feed even in pleasant weather. Sheep are better adapted to the exhausted condition of our ranges by far than cattle.

The Langdon Pioneer expresses the prevailing sentiment in saying that the profits of keeping sheep in North Dakota are on every hand admitted to be large and constant. They can be cheaply fed, and the western part of this region, which has not proved to be in the highest degree successful for wheat-growing, is admirably adapted to sheep husbandry. The unwished-for drought, which sometimes occurs, promotes the health of sheep, and the dry climate is an unvarying safeguard against all the diseases to which they may be liable in the moister States.

One of the great needs of agriculture in North Dakota, and the Northwest generally, to insure greater prosperity as well as to add to the taxable wealth of the country, is diversified agriculture. Governor Burke, in his inaugural address before the second legislative assembly on January 7, 1891, recognized the importance of the sheep industry in the following words:

> In the way of stimulating a diversification of our agricultural pursuits the introduction of sheep-raising, as an addition to the resources of our farmers, I look upon

as worthy of attention and study. These sheep as a rule are held in small flocks, and the establishment of this industry appears to me as a step in the direction of making every section of our State wealth-producing.

There is probably no new State that has a larger amount of unoccupied fertile prairie land than North Dakota. This is mostly Government land, subject to preëmption and homestead, and aggregates over 16,000,000 acres. Nearer the railroads, within the land grants and more thickly settled portion of the State, is a vast amount of land for sale at prices ranging from $3 to $10 per acre. The Northern Pacific Railway has nearly 7,000,000 acres of such lands, to say nothing of other grants which are not so large. This aggregation of cheap pasture land, in connection with the healthful, invigorating climate, makes animal industry a desirable pursuit for the Dakota farmer. The snowfall in winter is much lighter than in Iowa or Nebraska, and seldom begins until after December. There is no trouble in the fall or spring from muddy fields or nearly impassable roads, so common in States farther south and east.

About one year ago, in the latter part of 1890, Hon. H. T. Helgesen, commissioner of agriculture and labor, sent out a circular to stockmen for the purpose of procuring information regarding stock-raising, with especial reference to sheep. In summing up the results of the reports received the commissioner says:

Stock-raising is quite extensively carried on in Billings, Burleigh, Hettinger, McHenry, Morton, Stark, and Ward counties, while the interest is very perceptibly increasing in Stutsman and some other counties. The Missouri slope, the west Missouri country, the Mouse River region, and a small tract around the Turtle Mountains, are making stock-raising a leading industry, and in all these localities the interest in stock of some kind is increasing, usually sheep and horses.

The decided tendency is to increase the sheep husbandry of the State, so much so, that in several localities sheep are reported by experienced stockmen to command a higher price than the average farmer can afford to pay. The chief difficulty in many counties is that owing to the repeated short crops, most farmers desiring to start in the sheep business are hampered by want of means.

Most of the counties that raise sheep to any extent report that they have paid better than anything else, and the next most popular kind of live stock is horses. All of the counties heard from report sufficient pasturage, and most of them say that but a very small portion of the available pasturage is utilized.

Recent experiments have demonstrated that the soil and climate of North Dakota are well suited to the culture of sugar beets and other root crops, which form an important adjunct to sheep husbandry. It is conceded that the beet pulp and the root crops that can be raised in the agricultural portions of Dakota, as well as wheat screenings, furnish foods that are unequaled for producing mutton, and will serve to further stimulate and maintain the sheep industry.

In addition to the large amount of feed afforded by the native and cultivated grasses, hay and other crops in many portions of the State may be relied upon, and are therefore of importance in considering the resources of the State with reference to sheep husbandry. In the first

annual report of the commissioner of agriculture, made last year, in his analysis of the crops of the State, he says:

The main crop everywhere is wheat, though there is a growing inclination to raise other crops. A large increase in the acreage of flax is noted in several counties, but unfortunately the flax crop is unusually poor this year. Corn, and especially millet and Hungarian, are materially increasing and are usually reported as profitable crops. Barley shows a marked increase over last year in some of the counties, though this is more than offset by a decrease in others. Beans and pease are grown to an increasing extent, but are not raised in sufficient quantities to render them of much importance as a crop. The total acreage in several counties shows a decrease, especially in wheat, which is usually attributable in the interior counties to the persistent failure of crops, incident to lack of moisture, for the past three years, though it may be in some degree the result of defective work by the assessors in not obtaining correct figures.

The corn of the State is raised chiefly in the Missouri River counties and along the southern line of the State, although it is rapidly growing in popularity in nearly all parts of the State.

In the report of internal commerce for 1889, P. F. McClure, of Pierre, writes of hay and grass in the Dakotas as follows:

The native hay of Dakota is of such superior grade, so easily and cheaply gathered, and so abundant, that cultivation of tame grasses has generally been considered unnecessary. It is an indisputable fact that for centuries the Dakota prairies have been the winter home of the wild buffalo. So well is this understood that the large trains of ox teams used for freighting to the Black Hills from 1876 to 1885 were turned loose to graze on the prairie grass in herds of several hundred, and wintered on these sun-cured grasses without being fed a spear of hay during the winter, coming out in the spring in better condition than they were in the preceding fall. The custom prevails in western Dakota of starting out with a "haying outfit," consisting generally of a mowing-machine, alternated by two teams, a rake, and a couple of stacking teams, in July, and continuing operations until the October frosts. These outfits will take in an area of some miles, and where, on old lake beds, draws, ravines, or valleys, the yield may be from 1 to 2 tons to the acre, yet the average yield is but 1,000 pounds to the acre; and a yield of 500 pounds to the acre pays to cut. A mowing-machine covers from 10 to 12 acres per day, and the stacking wagons haul to convenient distances of a mile or more away and stack into "ricks," of 50 to 100 tons. Hay is thus put into the "rick" at a cost not to exceed $1.75 per ton. This buffalo grass and double-stemmed blue-joint is of a fine spear and very succulent and preferred by stock to tame or "cultivated" hay. There is no coarse stalk to be left in the bins, and to the newcomer it is a matter of wonderment to see how stock is worked on hay with little or no grain. During the drought of 1887, in Wisconsin, Illinois, and Iowa, many thousand tons of Dakota hay were shipped to Chicago and other cities and towns of the States named. As a result orders from livery-stable keepers have come to Dakota localities for "prairie hay" in large quantities. The prairie grasses of Dakota never fail, and on several occasions in the past, where hail or drought in localities has stripped the Dakota farmer of his expected revenue, he has turned to prairie hay and made a few hundred dollars to tide over the winter.

Old grasses and clovers, however, are being successfully cultivated in the more thickly settled portions of older Dakota. On the lower plains timothy is the best, but on the higher prairies red-top is the favorite. Red clover is found in small quantities in nearly every locality, and where dairying is carried on occasional meadows of alfalfa are grown, yielding from 6 to 8 tons per acre.

The grass of western Dakota is sun-cured by the dry months of July, August, and

September, and its succulence and nutriment are undoubtedly superior to tame grasses; for the experiments of feeding a ton of prairie grass and a ton of timothy shows that the prairie grass is eaten up clean and has more nutriment. At any time in the winter an examination of the roots of buffalo grass shows it alive and green. Nowhere in the world do the native grasses grow with such luxuriance and richness, and cattle in the winter have a variety of feed to choose from. The most common, however, are the buffalo, gramma, and the blue-stem varieties. Snows are very light, rarely remaining on the ground more than a few days at a time.

In order that the readers of this report may have a clear view and a definite idea of the progress of the industry in the eastern part of the State, the following communication, received from Watson E. Boisey, Bellevyria, Steele County, N. Dak., is submitted, omitting such portions as are not pertinent. Mr. Boisey writes:

My experience has been short, but the results have been such as to encourage me to raise sheep on a larger scale. The most flattering prospects of success attend the efforts of any one who will give the sheep good feed and reasonable care. It has been evident for some time that we farmers in the rolling section of North Dakota can not depend wholly on wheat raising for a living. Some years the crop is profitable, some years not. On this account some settlers have been sold out and have left the State; others have left before being driven out, and now the attention of quite a number of those who remain has been attracted to the sheep industry in this county only as an adjunct to wheat raising. Until last fall there were only two men in this (Steele) county who had sheep in any number. H. D. Carpenter, of Hope, has been raising them for five or six years. He began with 50 sheep, and has bought twice since. Last fall he sold 90 lambs for $400. He had about an equal number of ewe lambs, which he kept, as has been his practice each year. He now has about 300 ewes, and lambs almost too numerous to count. He told me that his wool yield last year, from 160 to 170 sheep, was worth about $260, making a total income of about $1,060 from the 160 to 170 sheep. He has raised sheep nearly all his life, having devoted considerable attention to them in northern Vermont before coming to Dakota, and he takes to it naturally. He takes pains to have fine bucks (he uses the Oxford Down), and only lets them cover a few ewes per day—perhaps ten—so the lambs are strong. In the lambing season he or his men are with the sheep day and night. He is the only man in the county who devotes his entire attention to sheep and feed for them, and this only the past year or two.

T. J. Foster, also of Hope, N. Dak., has about 300 ewes. It is about three years since he commenced with them. He is raising Shropshires and is having good success. Quite a large number of Norwegians in the northern part of the county have had one or two apiece simply to produce wool for stocking yarn. But three poorish crops in succession turned our farmers' attention to sheep raising, and quite a number last fall bought small flocks of from 25 to 100. One man, Nels P. Rasmusson, of Barnes County, got about 1,500, of which he keeps 1,200 in this county. Nearly all have been very fortunate here in wintering their sheep, and are doing well with lambs.

As not many of the railroad sections here in the Northern Pacific land grant are under cultivation, there is ample pasturage, and the sheep do very well on our nutritious prairie grass. As they are extremely fond of wild buckwheat, they will prove very valuable in helping us to rid our lands of that pest, at the same time enriching the land. I feel quite enthusiastic about this industry, as we can still raise nearly, if not quite, as much wheat as before, and keep a good flock of sheep besides. Where there is a scarcity of prairie hay to be cut, millet can easily be raised. I wintered my sheep on millet with an occasional feed of rutabagas. With millet and rutabagas no grain will be needed, at least not till the lambing season.

Probably half my sheep were really fat right after lambing. The grass commenced growing this spring rather earlier than usual, which has helped the sheep through the lambing season.

TEMPERATURE AND RAINFALL.

Most persons unfamiliar with North Dakota have erroneous ideas as to the temperature and the character of the winter. The popular impression of nonresidents is that the winters are of unusual duration and severity, and that blizzards are of frequent occurrence during the winter season, and that unless both men and live stock are carefully housed from four to six months there is no certainty of surviving the winter. It is, therefore, supposed that the risks, expense, and hard ships incident to winter make live-stock husbandry an extremely hazardous undertaking in this northern region. Nothing could be more erroneous. It is true that North Dakota is nearer the Arctic regions than Iowa or Nebraska, yet, as a matter of fact, there is no more risk under similar methods, and the mortality of live stock is no greater in the former than in the latter States. Wintering stock in North Dakota is attended with certain disadvantages, and yet every other State south to Texas has certain other disadvantages that offset those which apply to North Dakota.

The official records of temperature and precipitation for the year 1889, which can be taken as an average year, as observed at Bismarck, Fort Buford, Moorhead, St. Vincent, Davenport, Fort Abraham Lincoln, Fort Pembina, Fort Totten, Fort Yates, Gallatin, and New England City, show that the average mean temperature for the year at all these points was a fraction over 40° F. The maximum temperature was mainly during the month of August, and the average was a little in excess of 100° F. The minimum temperature, average for all points named, was a trifle less than 36° below zero, and at each of these places it was reached during the month of February.

The average annual precipitation of rain and melted snow for all the places mentioned where the records were kept was 10.17 inches. As the greater portion of the precipitation occurs during the growing season, the winters are comparatively dry and free from storms or damp weather, and prevailing sunshine is the rule. The extreme weather comes in the latter part of the winter when stock have become inured to the cold, and if they are properly fed will readily withstand it without any unusual loss, unless caught in a sudden and blinding storm when out on the open range and at too great a distance from winter quarters. This, however, does not often occur in the case of prudent and experienced flockmasters.

NUMBERS AND VALUES.

The recent separation of Dakota into two States, and the imperfect system of collecting official statistics by the State authorities, have

made the work of securing even the approximate results here given a difficult task. The assessors' returns, which ordinarily are incomplete and unreliable, usually form a basis for a fairly correct enumeration, but the State officials of North Dakota found such returns quite unsatisfactory, therefore they are only considered here for comparison. The State board of equalization reports for 1890 and 1891 show that the number of live stock assessed for taxation purposes was as follows:

Sheep.		Cattle.		Horses.		Mules.		Hogs.	
1890.	1891.	1890.	1891.	1890.	1891.	1890.	1891.	1890.	1891.
98,290	231,355	232,960	260,063	124,237	134,538	8,245	7,410	159,523	39,783

It will be observed that sheep have increased wonderfully in comparison with other classes of stock. The numbers of hogs and mules have declined, while horses and cattle show a small increase. Sheep have increased in the single year 1891 nearly 135 per cent over the previous year, which causes the Commissioner of Agriculture, in his report for 1890, to observe:

> Some stockmen, whose opinions are thought to be conservative, estimate the total increase in the State at not less than 150,000 to 200,000. If these estimates are correct, there are now in the State 250,000 to 300,000 sheep, and next year, allowing for natural increase, will see not less than half a million head within our borders.

From the best information obtainable by the writer these estimates are substantially correct. The State auditor, in a letter of October 6, 1891, says that the number reported by the assessors for 1891 represents about 50 per cent of the sheep of the State. The auditor's report and estimate do not include all of the sheep brought into North Dakota from other States this year. Information based upon careful estimates of the number of sheep in hand January 1, 1891, the increase of the flocks for 1891 and the sheep brought in from other States and Territories, shows the number of sheep January 1, 1892, to be 557,590 head, valued at $1,951,565. The wool clip for 1891 was at least 1,750,000 pounds, which netted the growers about $333,333, and the mutton sales as much more. If we add to these estimates the value of property other than sheep necessary for conducting the business, it is fair to estimate that the sheep industry of North Dakota represents a value of nearly $5,000,000.

PROMOTERS OF THE SHEEP INDUSTRY.

The rapid increase in the number of sheep in the Dakotas has really been quite remarkable, and has excited the attention of sheepmen everywhere. A report on the subject of this industry in North Dakota would be incomplete without devoting some space to a class of persons who have been largely responsible for its unusual development. There is a class of individuals as well as companies and corporations which

are now generally known as "promoters." This class is composed of shrewd and sagacious business men of means or influence who have taken advantage of the active demand for sheep to employ their own means, or to borrow capital advantageously to promote the extension of the industry and make large profits on the investments. The "promoter" found that he could buy sheep quite low for cash in Montana and other Western States, provided he was not particular as to the class of sheep, age, quality, and grade considered, and by purchasing them in large numbers he could buy them cheap. He resold or put them out on shares in small lots of from 50 to 500 head or more to responsible farmers who were eager for sheep and suitably equipped to handle them without special risk to the "promoter," under a contract with the farmer to properly care for, shelter, and bear all expenses of maintenance of the flock, and thus make good to the "promoter" all losses. In consideration of this he was to receive one-half the wool and one-half the increase and at the expiration of the contract return to the "promoter" the original number of sheep selected from the flock. In the contract the "promoter" usually reserves the right at any time to repossess himself of the sheep if dissatisfied with the way they are being handled, with recompense to the lessee. He also reserves the right to control the sale of wool, which must be delivered to him as soon as clipped.

When sheep were not leased on shares they were sold in small bands, either for cash or on time, when satisfactory security could be given, and at an advance which is seldom less than 50 per cent net for spot cash. When sold on time the usual advance over cost is 100 per cent, and as much more as the traffic will bear, with a minimum rate of interest of 10 or 12 per cent for a period of from three to five years, and an annual payment on the principal which comes out of the wool and mutton sales. The "promoter" took no risks and was sure of the bulk of the profits, while the flockmaster had to wait until he was out of debt or until he could realize something from the increase.

So very successful were the pioneer "promoters" in realizing large profits that during 1890 and 1891 the number increased, and almost every county in the State was under their operations. Banks, mortgage-loan companies, and other capitalists became interested in sheep speculation. Companies were also formed to enlist eastern capital to invest in sheep husbandry. It is estimated that in 1890 over 20,000 sheep were brought into North Dakota by "promoters," and a larger number during 1891, to say nothing of the number brought in by the stockmen and farmers themselves.

The development of the sheep husbandry in North Dakota by this system of "promoters" has had its advantage as well as its disadvantages so far as the future welfare of the industry is concerned. It has enabled farmers who were barely making a livelihood by exclusive wheat-raising, and who were without capital, to enlarge or extend opera-

tions to other lines of diversified agriculture, to make a small start with sheep, and at the same time utilize feed and grass which otherwise would have been lost or wasted. Very many farmers who were unfamiliar with the sheep husbandry have by this method of starting with a small band of sheep had an opportunity to learn their business by the time they had a flock of their own, and if reasonably successful they received at least fair compensation for time and labor expended in getting a start.

So eager were many of the farmers to get a start that they willingly paid exorbitant prices to the "promoters" and speculators for their sheep, or subscribed without hesitancy to the various conditions prescribed under the leases or time sales. No doubt many of these inequitable business transactions were made by taking advantage of the inexperienced, who were ready victims, owing to the prevailing excitement about sheep, and the fabulous profits of sheep husbandry, which, on paper, are so apparent and yet really so deceptive. The following is a sample of a very conservative estimate used by certain North Dakota "promoters."

The following figures will perhaps be of interest, showing as they do the profits to be derived from sheep-raising:

Cost and expense to farmer.

Original flock, 100 sheep (average cost)	$350.00
Cost of keeping 2½ years, at 75 cents	187.50
Cost of keeping 75 lambs 2 years, at 75 cents	112.50
Cost of keeping 115 lambs 1 year, at 75 cents	86.25
	736.25

Return and profits.

Wool from original flock, June, 1891, at $1 per head	$100.00
Increase for 1891, estimated at 75 per cent of flock, worth June 1, 1893, at least $2.75 per head	206.25
Wool clip June, 1892, at $1 per head	175.00
Increase, 1892, estimated at 115 lambs, worth June 1, 1893, at least $2.50 per head	387.50
Wool clip, 1893, on 290 sheep	290.00
Estimated increase, 1893, prior to June 1, 200 lambs, worth June 1	400.00
Original flock	350.00
Total return	1,908.75

From this amount allow 20 per cent for losses and there still remains a net profit of 100 per cent in two and one-half years. These figures give, we believe, a conservative estimate, and are based upon the present low price of wool.

Others figured out the annual net profit at 100 per cent of the original investment. One of the worst features of the "promoter" system was found in the anxiety for big profits. Cheap sheep were purchased, and consequently among them were large numbers of culls—a very poor

class of sheep to start a flock with. Had not the winter of 1889–'90 been unusually mild the loss would have been large, but as the sheep were well fed and housed and run in small flocks the loss was quite light even among aged ewes. A few flocks of scabby sheep were also brought in, but under the present restrictive laws this is not likely to occur again.

There are a few "promoters" who are really doing much to foster the sheep industry. They are experienced sheepmen and bring in only choice animals, and while they lease sheep so as to secure themselves from loss, their terms are fair and equitable. The lessees receive a due share of the profits and a certain chance to have a desirable flock of sheep of their own within a reasonable period. The day of unscrupulous speculators is fast passing away, but their misdeeds remain in some localities, to the disadvantage of the industry. The people of the State have, however, learned a great deal of practical value about sheep husbandry during the past year or so, and in almost every county there are some that have demonstrated what class of sheep are best suited to their section of the State, and what methods of conducting the business are most desirable in every way.

GENERAL FACTS ABOUT THE INDUSTRY.

Generally speaking, the sheep industry of North Dakota was begun at a time when everything in the way of agricultural pursuits was at a low ebb. North Dakota came into statehood with all her financial expectations based on her great staple crop of spring wheat. This crop was their main standby, and other crops and live-stock husbandry were merely incidental; therefore, when the wheat crop failed the husbandman was financially embarrassed. More than one failure in succession meant, in most cases, ruin, especially in the newly settled portions of the State, and that includes the greater portion of North Dakota.

The years 1889–'90 found the farmers of North Dakota suffering from agricultural depression to a greater extent perhaps than any other western State. The farmers of this State had but one crop to depend on, and when that failed they had no other resource. Notwithstanding this discouraging condition, it may ultimately result beneficially to the State. This experience has taught the farmers that they can not afford to rely on a single crop, and if they are to prosper in this country, so magnificently endowed by nature, they must study its resources and climate with special reference to such branches of agriculture as have a special adaptation to North Dakota, and above all strive for a diversified agriculture.

When a very considerable number of farmers had reached the distressed condition which resulted from pursuing the single-crop idea, and like Nicodemus of old, were asking, "What shall I do to be saved?" each one began to look about him with a view to bettering his condi-

tion without abandoning the country. He readily discovered that the country was well grassed all over, and he also observed, perhaps with envy, that his neighbors to the westward in Montana were fairly prosperous, while he was depressed if not actually distressed. They were raising sheep, horses, and cattle profitably, with a small outlay of time and money, on nature's own supply of native grasses which were no better in quality and less abundant in quantity than in North Dakota, where they were not utilized to any measurable extent. He was led to believe that live-stock husbandry was a necessary requisite to permanent prosperity in North Dakota, and would succeed in many portions of the State independent of wheat culture.

Whenever any agricultural or grazing country reaches a point of adversity, that innocent and frequently despised domestic animal, the sheep, seems to be necessary for its salvation; therefore, the sheep industry is now one of the most promising resources of the young State of North Dakota.

The sheep of North Dakota, especially those brought into the State during 1889–'90, are quite similar to those of Montana, as the bulk of them came originally from that State. The predominating strain is of the Merino blood, with a growing tendency favorable to the mutton breeds. Especially is this so in the eastern portion of the State. In Emmons County, which has the largest number of sheep of any county in the State, 80 per cent are grade Shropshires, and the remaining 5 per cent are pure-bred Merinos and Shropshires. A large number of sheep represent mixed crosses of fine-wool and medium-wooled sheep. Other flocks represent a cross of French Merino and grade Shropshires.

There are very few large holdings of sheep in the State, except such as are owned by companies or "promoters," who sell or put them out on shares. The flocks put out on shares range in size from 100 to 500. Regular sheepmen own flocks of about 1,000 in number. In the eastern part of the State, in the Red River country, where farming is general and the sheep are mainly Shropshire or Cotswold grades, 25 to 100 sheep comprise about the regulation flock. In Richmond, the southeastern county of the State, which has about 5,000 sheep, the flocks run from a dozen to 200 head. Generally speaking, in the farming districts of the State, 500 sheep are considered a large flock, and in the western or central portion from 2,000 to 3,000 are called a large holding. In Steele County, near the eastern border, the largest flock owned is said to number only 1,200 head. While the industry is yet in its infancy, it is a matter of noteworthy interest that sheep husbandry is being carried on by a number of owners, and the sheep owned throughout the State represent almost every breed, grade, or cross found elsewhere in this country. The business can well be regarded as an extensive experiment with brilliant prospects before it; but some time must elapse before it settles down to a permanent basis.

The native prairies afford most of the grazing. In the Red River

valley the land is flat, and consists of black soil with clay-loam subsoil. Farther west the upland prairies have soil of varied richness. In central and western North Dakota the prairies have great varieties of soil—the pocket lands, with a sandy soil and a gravelly soil on the ridges, clay loam, gravelly subsoil and alkali soil. Much of the rough or rolling prairie lands are suitable for summer grazing, and are utilized only for that purpose. At present there are unlimited areas of cheap or free range, and it will be many years before they are fully occupied, if ever.

Grass is everywhere abundant and of numerous varieties. Buffalo grass is common throughout the State. There is also considerable bunch grass. Trees are scarce, except a few along the streams. In the western portion of the State the buttes afford shade in summer and natural shelter from severe winds. Water is plentiful in most portions of the State from streams, springs, etc. In the cultivated districts wells are the main dependence. At present much of the larger area of the State consists of rich grazing lands suitable for any class of stock, and as most of it is Government or railroad land, it is accessible and available for sheep or other stock with little or no cost to the owner—an advantage of vast benefit and assistance to beginners who have engaged in the business on borrowed capital or have sheep on shares.

The loss of sheep in North Dakota from any source is, so far in the history of the industry, remarkably light. However, since the industry has become general there have been no unusually severe winters, so that losses reported have been substantially at the minimum. Yet, in view of the general inexperience in sheep husbandry, the insignificant annual losses from all sources are a favorable indication of the adaptability of the country for sheep-raising. Especially is this so when we consider the inferior condition of so large a number of Montana and Western culls that were brought in by speculators and "promoters," and the inexperience of many of the men who purchased the sheep or took them on shares. The chief source of loss is from exposure. From the depredations of wild animals, the annual losses so far are less than 1 per cent, and the losses from exposure, which were mainly in the central and western parts of the State, only amounted to from 2 to 3 per cent of the flocks.

In regard to the character of the wool and the constitution of the sheep brought into North Dakota from other States, it can safely be stated as a general proposition that no adverse effects from the change are noted, especially if the sheep are not too old or out of condition. Sheep brought from the East do fully as well after the first season, when they become acclimated, as sheep raised in the State. Western sheep, if young and healthy, do fully as well as home-bred. Sheep of all breeds, no matter where they come from, seem to do well here and become acclimated very readily. It is the general belief that sheep

brought into the State improve in vigor and yield a greater quantity of wool. It is largely a matter of belief, however, as regards an increase of size. Western sheep seem to do better here than in Montana or Oregon, for the reason that they are run in smaller bands, and receive accordingly better care than can be given in the large flocks from which they originally came. The great point about the State's adaptiveness for sheep is that in no case is the constitution impaired, wherever the sheep may come from. They usually show improvement with proper management in an increased quantity and improved quality of wool, especially after the first year. The bulk of the sheep come from Montana, Oregon, and Colorado. The sheep from the South and East require more care the first year than those from the West. The noted improvements so far manifest among the flocks are attributed to their being run in smaller bands, the better care given, and the abundance of nutritious grasses of extra quality on which they have to graze.

The class of breeding rams in use in North Dakota includes almost every known breed and their grades, as well as crosses of different breeds. Among the smaller flocks in the eastern part of the State long-wool and medium-wooled bucks or their grades are most common. In nearly every county the Merino ram is used, yet generally throughout the State the Shropshire is the favorite. The Oxford Down, the Cotswold, the Leicester, and the Hampshire are more numerous than was anticipated by the writer. Experiment seems to be the prevailing idea at present, and what the final result will be is a difficult matter to forecast. In Stark County the Dickinson Merino, Hampshire Down, and Shropshire seem to be the leading favorites, while in the rich farming districts the mutton breeds, the long-wools, and the medium-wool Downs constitute the favorite breeds. But the fine-wools of Merino blood must necessarily be generally prevalent wherever sheep-raising is the main pursuit. The ages of the bucks in use run from one year old and upwards, although the favorate age for finer breeding is two years old.

The number of ewes bred to each ram is, for Merinos, from 30 to 50, and for the Cotswold and Downs from 40 to 75; in some cases as high as 100 ewes are bred to a single ram. The usual plan of operation is, about December 1st, to let the buck in with the flock of an evening. In the morning he is turned away from the flock and well fed and housed during the day. This plan is kept up from four to six weeks, or until the ewes are all bred, when he is turned out with the flock and remains until the following summer, in some cases as late as August.

According to various reports received from different parts of the State the average per cent of lambs raised is really quite large, especially when it is considered that the grazing districts are mainly of the open range country, and that very many of the flockmasters are inexperienced. But the flocks are uniformly small, and high results may be accounted for by that fact. The minimum averages about 75 per cent, while the maximum is as high as 130 per cent. Another reason

that may be assigned for these large results was the mild winter and the consequent good condition of the ewes. The lowest average was reported from those whose flocks consisted mostly of western sheep, while the average reported from 90 and above were mainly from the older and smaller flocks located in the farming districts.

In these small flocks very few of the ewes, unless they are old or out of condition, fail to breed. The largest number reported in any county failing to breed is 10 per cent, while the average for the State is placed at 2 to 5 per cent, which, in view of the mixed character of sheep handled, is remarkably small.

The flockmaster of North Dakota finds it necessary to feed and shelter during winter, and in this respect his method differs from that in vogue in Montana. Every sheepman expects to provide both feed and shelter, which is unquestionably a wise and necessary provision. In most portions of the State shelter is only required at night or during stormy weather. The only food absolutely required to carry sheep through the winter is good hay. Yet flockmasters who have grain available feed that as well, especially where the sheep consist of the mutton breeds, and wheat screenings are abundant. This product is a remarkably good sheep food, and makes more good mutton than almost any other obtainable feed; besides it possesses the valuable quality of cheapness.

The ordinary shelter provided for winter consists of a great variety of sheds, barns and the like. In the eastern part of the State, where lumber is cheap, good comfortable sheds or barns are provided by those who are able, but farther out in the State, where lumber is expensive, other material must be used. Shelter, which will keep out wind and snow, usually consists of a sod or brush wall, about 6 feet high, with poles to support the roof, which is covered with coarse hay or straw. In some cases the back and side walls are excavated from the slope of a hill, and the whole thing cheaply constructed.

The sheepmen are mainly landowners, that is, they own a quarter section or more each. On this land is the home of the sheep owner, with barns, sheds, etc., but the land used for grazing purposes is generally Government land. In some places the men lease the State lands at a cost of $20 a section, in order to secure hay when they do not have an abundance on the home farm. The grazing lands throughout the State are what is generally known as free range.

The main objects in sheep-raising in North Dakota are both wool and mutton, the State naturally being adapted to both. In the grain-raising district, good mutton is especially desired, with as much wool as possible, while out on the plains, wool is the chief object, with as good a mutton carcass as possible.

Sheep-shearing begins in the latter part of May, and the season closes in June, most of the clip being taken off during the latter month. The shearing is conducted in the ordinary way, differing, however, from

the other range States, in that the roving bands of shearers are not yet common throughout the State. Every man is able to do his own shearing with what assistance he may receive from his own employés and those of his neighbors. The expert shearer is not numerous in North Dakota as in the older sheep States. The fleeces are tied up in the usual way, each one separately. The wool produced in North Dakota represents almost all grades, from fine to coarse. The chief grades, however, are fine, fine-medium, and medium. The extreme range of prices, net, to the grower for these different grades runs from 14 to 21 cents, the greater bulk bringing 16 to 18 cents. The cost of marketing runs from 2½ to 3½ cents per pound. Last year about 14 cents was advanced on consignments, while this year it was less. The larger part of the wool grown in the eastern border of the State consists of the medium grade. The average weight of fleece reported to the writer from different counties was: In Cass County, 7 pounds; Barnes County, 8 pounds; Emmons County, 8 pounds; Grand Forks, 7½ to 10 pounds; McHenry, 6½ to 11 pounds; Morton, 8½ pounds; Hettinger, 7 to 8 pounds; Pembina, 6 pounds; Renville, 8 pounds; Richland, 7 to 8 pounds; Ransom, 7½ to 8 pounds; Stutsman, 6 to 13 pounds; Stark, 6 to 9 pounds; Steele, 7 pounds, and Ward, 7 to 8 pounds. Taking these counties as representative, the average could safely be placed at 7 pounds.

The best market for wool does not seem to be confined to any one place, owing to the fact that most of the clips are small. The local buyers pick them up or they are sold to the North Star Woolen Mills in Minneapolis, which gets a large share of its wool in this State. Of distant markets Boston and New York are favorites, as well as Chicago. North Dakota wools are also sold at Minneapolis, St. Paul, and St. Louis. Considerable quantities of this wool are scoured in Minneapolis and afterwards shipped to eastern markets. For mutton in small lots the local demand is good; for larger lots or carloads, St. Paul and Chicago are the markets. Some shipments are made to Sioux City, Iowa, and Winnipeg, Manitoba.

The proportion of the flock disposed of annually, either as stockers or for mutton, is in most sections of the State very small. Where the sheep industry is yet quite new it will be a year or so before there will be any great surplus to dispose of; at present the shipments are composed of aged sheep. Stockers are sold usually from July to October. In sections of the State where farmers have a few mutton sheep the sale is confined to wether lambs. Most of the sales are made at home. Occasionally car shipments are made to Chicago or St. Paul, and invariably bring the top of the market. In Steele County wether lambs have brought their owners from $4.50 to $5 each. Ewes bring all the way from $2.50 to $3.50. Sheep sold for mutton range all the way from 95 pounds up to 150 pounds live weight. Grade Shropshire and Cotswold spring lambs vary all the way from 70 to 100 pounds. Grade Merino wethers average from 95 to 115 pounds when mature.

Owing to the number of small flocks through North Dakota regular herders are not employed, the work devolving on farm hands who do general work, so that the tending of flocks in North Dakota during the grazing season is in charge of either the farmer's children or hired man. Regular herders are employed only when the flocks are of sufficient size to require a man in charge all the time. The wages paid farm hands or herders range from $20 to $30 per month with board, the prevailing wages being about $25. During winter the wages are much less, running from $10 to $15. This difference is due to the fact that hands are much more plentiful in winter, and the sheep do not require so much attention on account of being in their sheds most of the time.

The average cost per head a year varies greatly throughout the State. When only a few sheep are kept, mainly mutton sheep, the average expense is much greater than in the range country where only hay rations are given. The estimates given in a few counties are as follows: Barnes County, $1 per head; Emmons, 75 cents to $1; Grand Forks, 50 cents to $1.25; McHenry, 75 cents to $1; Pembina, 75 cents; Richland, $1.50; Ransom, 35 to 60 cents; Stutsman and Steele, $1, and Stark, 40 to 75 cents. Many of the small sheep-owners estimate that the wool pays all expenses, leaving the increase and mutton sales for profit. It is safe to say that $1 a head per year is a correct average estimate of the cost for the State.

The local advantages for sheep husbandry in North Dakota are manifold, and those mentioned in particular by the enthusiastic flockmasters in different parts of the State can be summarized briefly as follows: A natural sheep country, with an abundance of cheap feed for both summer and winter; a climate pure and invigorating, the greater portion being dry and healthful; grazing lands free, especially on the public domain; everywhere grass and hay are plentiful, and in the farming districts the refuse of wheat, such as straw and screenings, make excellent winter feed. Most of the sheep-owners of the State are well located in reference to good markets for both wool and mutton.

The health of sheep is uniformly good, no diseases of any kind being incident to them, although some flocks have been troubled by scab and ticks. The prevalence of scab is no doubt owing to the carelessness or inexperience of those who have recently engaged in the business. They have purchased, without proper precautions, from speculators or "promoters" who have bought sheep farther west as cheaply as possible, and then resold at as extortionate prices as they could secure. The sheep affected with ticks are those smaller flocks in the hands of farmers in the great wheat belt. Most of the flockmasters of North Dakota are inclined to the opinion that they have a little the best sheep country on earth, and think that they can produce finer wool and mutton than any other place in the country.

The chief difficulty and obstacle encountered, in addition to the above, is the inexperience incident to a people new in the industry.

There is some complaint of dogs in the thickly settled portions of the State, but the most common difficulties are the severe winters and the prevalence of dust in the air in certain seasons of the year, which fouls the wool. Worst of all, though, is the danger of prairie fires which in the fall are apt to sweep over the country. In Morton County the alkali holes in dry seasons cause some trouble. A great many of the flockmasters state that there are no particular disadvantages of any consequence only such as are common to any new country, and even these, when the industry is better established, can be overcome by proper management.

While the industry is in its infancy the enthusiasm is remarkably intense and the tendency is for everybody to get into the sheep business. In Stark County over 20,000 sheep were brought in during last year, and in nearly every county of the State the number of sheep brought in this year will be equal to the number owned at the present writing. The outlook is very bright, indeed, for the industry, and a veritable boom in sheep prevails throughout the State.

As to the best methods for profitably conducting the business, the industry is yet too new for the formulation of uniform rules applicable to the whole State, except in a few particulars. The first essential is to have good sheep. If but few are to be kept on the farm the mutton breeds are preferred, but farther west the Merino ewe of good size should be the base of the flock, bred pure or perhaps crossed with middle-wool bucks. Beginners should start with flocks no larger than can be given proper attention. Sheds and feed should be supplied in sufficient quantity to carry the flock through the winter. In summer or during the grazing season the sheep should be changed on the range frequently. In no case should they be run in flocks to exceed 1,500 head. Great care should be exercised during the lambing season and sufficient help secured to guard against losses. So long as sheep continue to be brought into the State it is advisable to dip them all, after shearing, to prevent scab and ticks. In the greater portion of this State it is well to adopt the successful methods in vogue in Montana, except that they should not be run in so large bands. Avoid having more sheep than can be comfortably sheltered in stormy weather. Be sure to have plenty of feed and water for any emergency, and give the business personal attention. With good stock and good management there is no agricultural or pastoral pursuit that will give better returns to the husbandman or flockmaster.

PRAIRIE FIRES.

Prairie fires constitute one of the most serious drawbacks to sheep husbandry on the plains of North Dakota. They do more harm and cause stockmen more concern and anxiety than any other obstacle encountered. The general but quite erroneous supposition, especially among nonresidents, is that winter is the great obstacle. Stockmen

generally would prefer immunity from prairie fires rather than from the severest winter ever known. In the past the disastrous results from these fires each year have been far greater than the combined losses of several severe winters. Heretofore the coming of prairie fires was of regular annual occurrence, while hard winters of unusual severity, causing large loss of stock, are not the rule. But few people have an adequate idea of the loss every year from these fires. Besides the direct loss of property it is a serious drawback upon the prosperity and development of the State. So widespread had become this annual devastation, where grass must always constitute the chief natural source of wealth, that the last legislature felt it imperative to consider this as a matter of prime importance, and accordingly enacted a statutory provision which, if rigidly enforced, will give greater immunity in the future. Mechanical genius should be encouraged to invent some method of burning with safety fire-guards, and thereby materially aid in the development of these new and great prairie States.

The present law in force regarding prairie fires will undoubtedly result in a general and uniform action among the farmers and stockmen, so that loss of live stock and other property will be greatly lessened hereafter, even if the law does not afford absolute protection. The sentiment of the people is so favorable to a law of this nature that no fears are entertained as to its enforcement.

PERSONAL EXPERIENCE AND OBSERVATIONS.

The following paragraphs, compiled from correspondence and personal interviews with practical sheep-owners, are particularly valuable and interesting, because they present briefly in their own language many pertinent pointers regarding the sheep industry. The experience, observations, and belief of these representative flockmasters portray and mirror phases of the industry in such a graphic and pertinent manner that the report for North Dakota would be incomplete without them. They are the voluntary testimony of persons whose time and money are employed in demonstrating whether or not sheep husbandry can safely be relied upon as one of the permanent industries of this young Commonwealth. Some of the statements are from the pioneer sheepmen of this region, and whatever facts appear are especially worthy of consideration:

T. M. Elliott, Elliott, Ransom County:

I shipped in 9,000 head from Montana last year and sold them to farmers in bands from 50 to 700 head; prices, $3.50 to $4. I find an increasing demand for them and expect to see many thousands of them brought in this year.

H. S. Dickinson, Dickinson, Stark County:

The outlook for sheep is good. There is an increasing demand and they seem to be doing well so far. The amount of wool shipped last year was 66,000 pounds; estimated at twice as much this year.

A. Hilliard, Dickinson, Stark County:

Two years ago there were about 3,000 sheep tributary to this point; now there are about 40,000, and the industry is increasing fast. In most cases there have been excellent returns.

J. H. Serfield, Minor, Ward County:

The northwestern portion of this State is well adapted for sheep-raising. We have all the advantages here that can be expected by anyone. We have splendid ranges, plenty of good running water, and plenty of hay and natural shelter.

Nels P. Rassmussen, Valley City, Barnes County:

We have just started in the business here and had some loss this spring, mostly on account of old sheep and from overcrowding in the sheds. I have a flock of 1,400; lost about 6 per cent; nearly all were old. The younger sheep wintered well.

L. B. Richardson, Grand Forks:

I commenced the sheep business in a small way on the Mouse River in August, 1887. I now have a flock of about 2,500, and have found sheep-raising more profitable than the raising of any other stock or general farming, in which I am somewhat extensively engaged.

G. H. Grogan, Towner, McHenry County:

Have raised sheep as a side industry for thirty years. Always found it safe and profitable. Like Leicesters, Lincolns, and Shropshires best. Have dressed from ewes, grass-fed with no grain, 125 pounds per carcass; lambs, 70 pounds; wethers, 164 pounds. Mutton raised in North Dakota was called too fat, though not grain-fed. Have never seen a diseased sheep in eleven years in this State, save sore eyes for a few weeks last year.

T. F. Eastgate, Larimore, Grand Forks County:

There is a large range of unoccupied land west of here that is high rolling prairie, with good water in coulees and lakes, and by herding in summer it relieves farmers of their care during most of the busy season. Sheep are brought home after threshing and find good feed on the stubble as long as the ground is bare (last winter until February 20). Good ewes will give wool enough to pay all expenses, leaving the lambs for profit. The pelt will pay for raising a sheep, so it is impossible to lose on them if they have any care worth speaking of.

E. H. Bergman, Garden, Pembina County:

As all the land is taken, farmers here can only have a few sheep each, but I intend in the near future to increase my flock so it will pay me to send it out west about 100 miles or more from here and keep the flock there during the summer and at home during the winter—as I did last winter. I fed my flock only straw with little grain. I have now over 200 head.

C. E. Fuller, Lisbon, Ransom County:

My 98 ewes produced 142 lambs. Out of this number 120 are alive, and at present, June 20, weigh on an average 40 pounds each. The amount of feed to keep this flock was only 10 tons of hay and 2 tons of millet. The estimated cost would not exceed $25. They now show a profit of over 100 per cent on original cost.

I. C. Wade, Jamestown, Stutsman County:

Do not think there is any better place in the United States, as the cool dry climate is so healthy. The winters are very dry, no rain, hence wool grows better. The

short grass is so nutritious that sheep are fat in the fall, and good mutton the year around. Farmers readily make 100 per cent per annum. I expect sheep will go down in price when the number shall be largely increased. The only thing that holds the farmers of North Dakota from putting in a mutton sheep is the high price—$3.50 to $4 per head for first-class two-year olds. Sheep brought from Michigan have by actual test increased from 6½ to 8 pounds per head. Most of our sheep come from Montana and are Merino grades, and are being crossed with Shropshire bucks.

H. D. Carpenter, Hope, Steele County:

As regards the matter of turning a ram with ewes, we take him each morning and serve him to them; then keep him away and feed well. One year ago I came here; used an Oxford ram that served 200 ewes. This year two rams served 300 ewes, 90 yearlings among the number, and every one of them bore lambs, most of them raising their lambs. A man 6 miles south of here had 200 Montana ewes and only 1 buck. He has a fine lot of lambs this spring. I have a fence 12 feet high. I feed my sheep out of doors all winter, with the exception of five or six days, but people must have shelter in this country so they can use it in case of a bad storm. We feed on an average every winter three months, some more and some less, but will average three months. I sell my lambs to a butcher here for $4.50 each. He sold 25 out of one car at $5 per head. The remaining 75 dressed 60 pounds each.

Watson E. Boisey, Bellevyria, Steele County:

We have passed the trying part of the year and are pretty unanimously of the opinion that sheep can be raised here very cheaply—that they do splendidly, being very free from disease, so that we have a low death rate, and the profits, perhaps, above the average, as they seem to grow longer wool and heavier fleeces. There seems to be a premium on Dakota-raised mutton. They will keep fat on our very nutritious prairie grasses, of which there is an abundance for pasturage, and they will pick their living most of the winter, as there are few days that they can not run out at least a part of the day. It seems to be the general opinion that a very much larger number of sheep will be raised in the Dakotas in the near future. A liberal discounting of our expectations still leaves the likelihood that with a reasonable amount of care we can hardly fail to be successful in this enterprise.

W. K. Wheat, M. D., Dickinson, Stark County:

It has been only three or four years since any attention was given to sheep industry in this county, but it has rapidly developed from a few hundreds at first to a number of thousands at this time. Last year there were shipped by rail from Dickinson, on the Northern Pacific Railroad, 66,000 pounds of wool, last year's clip. For this year it is estimated that at least 100,000 pounds of wool from this county alone will be shipped to market, the product of this year's clip. All who have ventured in the sheep industry are satisfied with their results and believe that it will in the near future be the leading industry of this section of the State. My personal experience is quite limited. Last fall I bred my ewes to thoroughbred imported Hampshire Down bucks, and have several hundred lambs of their get this spring. They are well marked, large, and vigorous. I believe the Hampshire, for this section, to be the best sheep for mutton and wool combined, if profits are the desideratum.

George W. Patrick, Taylor, Stark County:

If the present prices can be maintained upon wool there will be considerable profit in raising sheep. No doubt the flocks will be doubled this year. There are some who will not be successful in raising sheep, because they will not use the care, patience, or knowledge in handling them that the animals require. Sheep require more humane handling than cattle or horses. One of the greatest difficulties is the prevention of scab. The laws were not stringent enough the past year, and a great

many sheep were shipped in that were infected with it. I have done very well with them. I received $1.57 per head, net, for my wool last year. Raised 93 per cent of lambs. I have at this date about 105 living lambs per 100 ewes. I have about 510 sheep to shear, and 340 lambs. I am grading up my ewes with Dickinson Delaine rams.

A. L. Hanscom, Towner, McHenry County:

I brought in about 300 ewes to this county in 1882, and I never lost a sheep by any disease, to my knowledge; if I lost any it was generally on account of somebody's carelessness. I have traveled over this country from Maine to the Pacific Ocean, and I think this is the finest region for sheep-raising on a small scale, say about 1,000 to 2,000 head. That would be the largest number I would advise keeping together, and my choice would be to get a good, large, strong, healthy sheep. Cross Cotswold ewes with Shropshire or Southdown rams, then you get good mutton and fleece of wool and a higher per cent of lambs.

Dugald Campbell, Glencoe, Emmons County:

Eight years ago I was almost, if not quite, alone in the sheep business here. Within the last two years capitalists have taken it up and are distributing on shares, or selling to farmers at very high prices on long time. The capitalists figure on getting 30 to 40 per cent on their money. If they do, the workers get nothing but experience, which will not long satisfy them. In States where little feed is required and large ranges can be run over, the worker might do well with sheep on shares, but here I fail to see how he can do more than make living wages. In many States there are laws against usury, but no Shylock ever exacted such terrible usury as those companies exact in their contracts from the despairing wheat farmers, who, in their distress, are clutching at wool, which will to many prove a show indeed.

William Rea, sr., Fargo, Cass County:

In Dakota I have some doubt of sheep husbandry, except out in the northwestern part where it is not adapted to wheat. Very many inexperienced men have gone into the business of sheep-raising, and a good many brought all "scabby" sheep into this locality and sold them to men who do not know anything about sheep. Some want to go out of the business already. I will give you my method of feeding mutton sheep: I have open pens which hold 1,000 sheep, all round shed for shelter, plenty of hay racks, kept full of hay; feed screenings; have patent boxes, keep them full so the sheep can eat whenever they want to. I pump the water by steam; keep water troughs full, as they require plenty of water. I find the best feeders are a cross from Merino ewes and Shropshire bucks. Merino sheep will not pay to feed until two or three years old. Other breeds will feed from one to three, so the coarse-wool is much more profitable to feed. Merinos for wool.

LAWS FAVORABLE TO THE INDUSTRY.

It is quite evident from the laws enacted by the second legislative assembly of North Dakota last winter, that the sheep industry was regarded as of considerable importance, and one that deserved whatever encouragement and protection it was in the province of a legislative assembly to enact in its behalf. So general was the interest manifested in regard to sheep husbandry, that it was not difficult to secure the necessary legislation to promote the development of the industry, and thereby enhance the valuable resources of this young Commonwealth. The provisions made are in brief as follows:

Making dogs property.—Section 160 of the civil code was amended

so that there may be ownership of all domestic animals, including dogs. By this provision they become personal property.

Establishing wool markets.—An act to provide facilities for marketing wool was approved February 26, 1891. With the exception of the enacting clause the law reads as follows:

SECTION 1. If any city, town, or village of this State shall in any year provide a building or buildings wherein not less than one hundred thousand pounds (100,000 pounds) of wool may be stored free of charge from June 15 to August 31, both inclusive, it may direct its clerk to notify the Commissioner of Agriculture and Labor on or before May 1 in such year of the fact that such provision has been made, stating the regulations established by such city, for receiving, storing, and marketing wool and the quantity of wool which will probably be marketed at such city in that year.

SEC. 2. The Commissioner of Agriculture and Labor shall thereupon, under advice with such city or cities, make proclamation to the sheep-raisers of this State, to the manufacturers of woolen goods, and to the wool-buyers of this State and other States, by notices in newspapers, circulars, and such other means as he shall deem most effective, that a wool market will be held at such city or cities, naming the same, stating the beginning and duration of such market, the provision of free storage, the quantity of wool likely to be received, and such other facts and particulars as he may deem proper for publication.

SEC. 3. Any person purchasing any wool while the same is stored in any building, as provided for in section 1 of this act, between July 15 and August 31, both inclusive, shall hold the wool so purchased free and clear of any and all liens, claims, and incumbrances of which he does not have actual notice at the time when he shall purchase and pay for the same, and such purchaser shall not be liable in any action at law or otherwise, either for the delivery of such wool or for damages to the holder of any lien or incumbrance on such wool.

SEC. 4. The Commissioner of Agriculture and Labor shall make a verified and itemized statement of his expenses and disbursements incurred and made under the provisions of this act, and file the same with the State auditor, who shall thereupon issue his warrants on the State treasurer therefor; but such warrants shall not in the aggregate in any one year exceed the sum of 1,000 dollars.

State veterinarian.—Under an act to prevent the spread of contagious and infectious diseases among domestic animals, the governor is empowered to appoint a competent veterinary surgeon, who must investigate in person or by deputy all cases of infectious diseases among the live stock of the State. He is given full powers to protect the sanitary condition of domestic animals. County sheep inspectors are required to make monthly reports to the State veterinarian, and he to make annual reports of his work to the governor.

Sheep inspectors.—The county commissioners of any organized county shall, upon the presentation of a petition signed by ten wool-growers of said county, appoint as sheep inspector a competent citizen of the county. It is his duty to inspect flocks said to have scab or any other malignant contagious disease and report in writing to the State veterinarian. If the flock is diseased he reinspects every four weeks, reporting result of treatment until the disease is reported cured. The owner of diseased flock is not permitted to range his flocks within 1 mile of any grounds used by other sheep, or travel them upon any public highway or road. Scabby sheep are quarantined and not allowed

to range upon public domain within 5 miles of other established headquarters for sheep. Owners of sheep have the right to stop and examine flocks driven within 5 miles of their headquarters. Severe penalties are inflicted for spreading infection. The sheep-owner is required to dip scabby sheep on his own premises. The sheep inspector may prescribe what dip or other remedies shall be applied and specify the manner of treatment. The sheep inspector is allowed $5 per day while necessarily employed.

Wolf bounty.—The county commissioners of each county in the State of North Dakota shall, upon the petition of twenty-five stock-raisers, offer a bounty not to exceed $3 and not less than $1 for each and every wolf or coyote killed within the limits of their county.

Prevention of prairie fires.—This law empowers the county commissioners to provide fire-breaks, divide the county into districts, and require a good bond of the road overseers as fire wardens. The road supervisors shall be made to call on all persons liable for poll tax to work upon fire-breaks at least two days in each year. A legal fire-break is a strip of plowing or burning, or partly plowed or partly burned, not less than 66 feet wide. A person refusing to respond to the summons of the fire warden is subject to a fine, and any person or corporation setting on fire the prairie is liable to fine and imprisonment.

There are other enactments that are beneficial to the industry, such as the law relating to mixed shipment of stock, the law regarding brands and earmarks, and the law encouraging the construction of artesian wells and to promote irrigation.

SOUTH DAKOTA.

The sheep industry is yet new to the young State of South Dakota This in a measure accounts for the prevailing enthusiasm regarding sheep-raising in the State. The rapid growth of sheep husbandry there has been the most sensational event of the industry of recent years. Yet it is a natural growth and the legitimate outcome of a period of depression which existed in the agricultural States of the great Northwest. It marks a new era in the inevitable development of that country. This industry is not fully developed, yet there is no question as to its future and its value as an aid in securing a greater diversity in agricultural and live-stock pursuits. The farmers of South Dakota have been, to a certain extent, deluded by the wheat craze which first attracted settlers to the Territory. They were drawn there by the glowing representations as to the possibilities of the country for wheat, set forth by the enterprising emigration and railroad agents. They proceeded at once to raise wheat and stuck to it almost exclusively, until low prices, adverse seasons, high-priced machinery, and higher interest rates nearly bankrupted many. This compelled the farmers to study the natural possibilities of the country, and they naturally took to sheep-raising as the most available way out. Those who were

able bought sheep, and others leased or bought on time, and in this way the sheep boom was started. The settlers observed that the few scattering pioneers who had been engaged in the sheep business were the most prosperous farmers of the State.

Not only were farmers attracted to and interested in sheep, but merchants, bankers, and speculators, as soon as they began to investigate, discovered that sheep promised better returns than any other class of stock. The whole State became interested, sheep were in demand everywhere, and in they poured from all parts of the country. Inexperienced men brought in sheep that were unfit, and many mistakes were made by beginners. The experienced flockmasters of Montana and other Western States and Territories took advantage of the unusual demand to get rid of the culls of their flock to ignorant buyers or speculators desiring cheap sheep. Fortunately the inexperienced farmer was able to secure only a limited number, and by taking good care of them, together with their natural increase, he was enabled to learn the business as he went along. The winter of 1889–'90, when most of the sheep were brought in, was unusually mild, and, as a consequence, those having aged stock met with light losses, notwithstanding the great risk incurred by starting with unsuitable sheep.

While nearly every county in eastern South Dakota has a considerable number of sheep, yet the great stronghold of the industry is in James River Valley, which contains the most select agricultural lands in the State. The bulk of the sheep now owned in South Dakota are confined to the half of the State which lies east of the Missouri. The west half has been until recently occupied by the Sioux Indian Reservation, but in 1889 about one-third of the area was ceded to the General Government and it is now utilized by stockmen to some extent.

In most of the Western States and Territories the pioneers in the sheep business were usually ranchmen who were located where the range was open and free to almost any occupant who took possession of it. The sheepman was not necessarily a landowner unless he possessed a home ranch which contained the sheds and other improvements, including winter quarters. His pasture was usually Government land, and in those States, most of the promoters and pioneer sheepmen having started with ample means, large flocks were the rule. But in the Dakotas it was different. Most of the men who handled sheep were limited as to means and embarked in the business as a last resort—the only thing left to save their homes and lands. Consequently most of the flockmasters had to start with small flocks, whether they purchased or leased. So great was the demand for sheep that in order to accommodate as many as possible they were sold or leased in small lots. When sold on time, at big prices, the payment was secured by mortgage on the stock or other available chattels or by real-estate mortgage. Whether they were sold on time or leased on shares a cast-iron contract was entered into with such arbitrary conditions that the inexperienced farmer was reluctant to take a large number of sheep. In the end it

was fortunate for the farmer, because it insured extra care of the few handled and at the same time gave him an opportunity to gain a little practical experience.

The State of South Dakota, according to the census of 1890, has a population of 328,808, an increase since 1880 of 230,540. The present population, when compared with the immense area, is insignificant. The area of South Dakota is 77,650 square miles, or nearly 50,000,000 acres of grazing and farm lands. There is no timber land of any extent. The water surface of the State is about 800 square miles, comprising the Missouri, Cheyenne, and James or Dakota rivers and their tributaries, and a few small lakes.

The geographical location of South Dakota is favorable in many respects. While it lies wholly north of Nebraska it is in about the same latitude as northern Iowa and Illinois, and southern Minnesota, Wisconsin, and Michigan. The central portion of the State contains the great Missouri Valley, and its altitude is less than that of the western portions of Nebraska and Kansas or eastern Colorado. The greater portion of the State is a level or undulating plain, and the area of the rough, broken, and untillable lands, including the hills and mountains which lie mainly west of the Missouri River, is not much, if any, more than that of the water surface of the State. The only mountainous region of the State is that portion of the Black Hills which is near the western border, occupying an area of 40 by 80 square miles, and the altitude varies from 5,000 to 7,000 feet above the sea level. These hills are covered with a thick growth of spruce and pine, which, from the distance, give them a dark appearance that undoubtedly suggested the name, Black Hills.

No portion of the plains contains a deeper or richer soil than the broad, open, and fertile expanse of Dakota. Especially is this true of the eastern part of South Dakota, which at present comprises most of the cultivated land of the State. The luxuriant growth of grass, which once supplied pasturage for millions of buffalo, is an evidence of the wealth of the soil.

The climate of South Dakota is very similar to that of Montana and North Dakota in most respects. Like the latter it is occasionally subject to those strong winds which in winter are denominated "blizzards," the popular reputation of which has done a vast amount of evil in prejudicing the nonresident against Dakota. These "blizzards" are not of frequent occurrence, and have no special terror to those familiar with the country and its climate. They are not so injurious to live stock as the wet, cold winter and spring months of the States in the lower Ohio and Missouri valleys. During the latter part of winter the thermometer occasionally registers lower, but the weather is more endurable because of the dryness, freedom from storms, light snowfall, and almost never-failing sunshiny days. In summer the nights are cool, and the autumn weather is universally the most delightful of the year, and continues so usually away into December.

Until very recently all that vast country in South Dakota lying west of the Missouri, comprising something over one-half of the entire area of the State, was set aside by the Government as the Sioux Indian Reservation. But in 1889 the reservation was diminished, about one-third of the lands being ceded to the Government. This opened up a magnificent and well-watered grazing land, which is destined to become a wealthy live-stock region. It contains the bulk of the rough and broken country and the only mountainous section of the State, the Black Hills. Western South Dakota, according to the State auditor's report for 1891, contained 14 per cent of the horses, mules, and asses; 15 per cent of the cattle, about 9 per cent of the sheep, and a trifle over 1 per cent of the swine. This is a significant showing, in view of the short time since it has been open to stockmen, and indicates something of the possibilities in the future of the animal industry of this region.

The transmissouri portion of South Dakota in all probability will be the only place where live stock will be held in large flocks, or where stock-raising will be made an exclusive business to any great extent, the stock business in the eastern part of the State being naturally a part of mixed farming.

The sheep industry of South Dakota is of vast consequence to the future welfare of the State, because it is the most pronounced departure from exclusive wheat-raising yet attempted. It is also an advanced step in the direction of diversified agriculture, which is so necessary to insure permanent prosperity to those dependent on farming.

The sheep industry has afforded the farmers of the State much needed relief and given them renewed hope, as is shown by the following extract from an article in the Dakota Farmer by C. A. Fowler, of Beadle County, who says:

> The sheep industry is of vital importance to the people of Dakota. It gives them better returns for their labor than any other part of farming. The drought and winds will come, as they have done from the dim ages of the past, or this country would not have been a prairie of such vast extent. Where the rainfall has been sufficient there are heavy growths of timber, as the coast mountains, the Sierra Nevada, the Rocky Mountains, and the country east of the Mississippi River, where the rainfall is 40 inches or more annually, abundantly prove. With a flock of sheep we will be better contented, and not feel so worried about blighted crops, as we will have something left to keep the "wolf from the door." The sheep industry must be our main one for some time to come. Irrigation we will have, and it will do for Dakota what it does for other irrigated regions, but we will be older than we are now before the farmers are generally supplied with water. But if Dakota is covered over with sheep we can stay here, confidently believing that with this industry and irrigation we will have the grandest farming region in America. When thousands of springs are flowing from their inexhaustible subterranean river we will forget the tribulations through which we have passed; forget our ruined fields and blighted hopes in beholding the great fields of golden grain, the millions of sheep upon the hills, and the millions of happy and prosperous people who will dwell in Dakota; and we will forget the past, for the "wilderness and solitary places shall be made glad, and the desert will blossom as the rose."

The writer of this report desires to acknowledge the valuable assist-

ance given him by M. F. Greeley, Gary, Deuel County, who, in discussing the prospects and profits of Dakota wool-growing, said:

Now, I have noticed that the dryer the season the better my sheep do; the colder the winter the thicker the fleece and the longer the staple. In fact, the more trouble the "wheat man" has the more the "sheepman" prospers. My attention was first called to the ease and perfection with which wool and mutton can be grown in this region. Nearly twenty years ago, when scattered along the head waters of the Minnesota, I found small flocks of sheep growing to perfection, remarkably healthy, and yielding a strong, even staple of wool with almost no attention other than an ample supply of wild hay and grass. Some years later I brought my own sheep here, but was hardly prepared to find it so perfect a sheep country as it is. In addition to this our cheap and unoccupied lands give many of us an advantage over the East, with which they can not possibly compete, while the perhaps cheaper ranges of the mountains have no such market for mutton as we now find it at our door and which is constantly improving. It is usual for the Western farmer to complain of high freights to Eastern markets, but in this business a little money goes a great way. Less than a cent a pound puts our wool into the best of markets, while 50 cents a head will land our fat sheep in Chicago stockyards. This business simply annihilates distance, and makes our lands devoted to this industry almost as valuable as though they were a thousand miles east. We regret that in showing up the advantages of this business it is so frequently necessary to bring it into comparison with other branches of farming. But next to the health and conveniences to market which our location and climate insure, the fact that the business can be carried on with less outlay for machinery and labor than almost any other farming is certainly an item worth considering. The help required to care for 20 cows will handle 1,000 sheep, and were I to do it alone I would certainly take the sheep every time. Another feature which strongly commends this business to the poor man is the quick cash returns and the rapidity with which sheep multiply. If he can but once secure a small flock he has not long to wait before he finds himself in possession of a large one, with no additional outlay. But I would not have you infer that because our climate is so well adapted to this business and our grasses so nutritious and everything so favorable generally, that a man may succeed in it without proper care and management. A more serious mistake could not be made. So far as "protection" of this industry is concerned, I sincerely hope a reasonable protection may be extended till every stony hill and every dry spot in Dakota becomes productive and populous. We certainly need the money for it here in Dakota as badly as England does. But the absence of protection can not destroy or cripple our industry. With our cheap lands and perfect climate we can throw our wool away and still compete with any Eastern State raising mutton alone.

One thing about the sheep-owners of South Dakota that augurs well for the industry is the facility with which they form local and State associations, and maintain them better than in any other State I have visited in my investigations of the industry west of the Mississippi River. If the interest in these organizations is maintained in the future as well as it has been in the past, they will greatly aid the sheep-owners of South Dakota to attain a higher degree of success with sheep husbandry, and in a few years make it the leading sheep State of the West, if not of the United States. My observation is that the lack of unity and interest manifested by some sheep-owners in their common industry is one of the discouraging phases of sheep husbandry. There is no class of stockmen so indifferent to there own welfare as sheep-owners, when they, more than all others, should be active and coöperative in

order to realize the fullest legitimate benefits. It is gratifying to state at this writing that South Dakota flockmasters are a notable exception to this general rule. Although many of them have had but a limited experience, yet the progress made has been simply wonderful in comparison with that made in many other States where the industry is longer established. This has been greatly promoted by the useful and active organizations, which have developed a spirit of emulation and improvement. By this method of getting together to discuss experience, methods, breeds and breeding, feed and feeding, marketing, etc., each one is benefited, sheep husbandry is made all the more profitable, and exhibits more rapid and substantial progress.

THE NUMBER AND VALUATION OF SHEEP.

At the time of the last annual meeting of the South Dakota Wool-Growers' Association in June, 1891, estimates were given by counties of the number of sheep in the State and the total reported by sheep-owners present was 402,307 head. In this estimate several counties were omitted, and the returns of the State board of assessment and equalization a few months later showed that there was assessed in a number of counties double the number of sheep reported at the time of the convention, which indicates considerable increase in a few months. A conservative estimate of the number shipped last year (1891) was not less than 75,000, although some newspaper estimates place the number at 100,000 and 150,000 head.

The number and value of live stock of South Dakota as shown by the abstract of assessment rolls returned to the State auditor for the year 1891, as equalized by the State board, is as follows: 239,884 horses; value, $8,352,188; 619,317 cattle; value, $5,746,703; 6,815 mules and asses; value, $244,803; 245,277 sheep; value, $420,785; and 243,710 swine; value, $409,761. The following table shows the number of horses, cattle, sheep, and swine assessed for taxation in the counties of the State west of the Missouri River:

Counties west of the Missouri River.

County.	Horses.	Cattle.	Sheep.	Swine.
Butte	3,556	18,461	121	194
Custer	5,627	10,985	3,584	363
Fall River	3,466	13,658	3,144	547
Lawrence	3,528	4,878	1,020	386
Meade	7,132	14,603	3,494	739
Pennington	5,675	12,183	4,456	648
Pratt	63	778	4	.....
Presho	109	325	300	8
Stanley	566	1,785	51	2
Wagner	.....	.....	.....	.....
Rinehart	.....	.....	.....	.....
Ewing	.....	.....	.....	.....
Choteau	.....	.....	.....	.....
Martin	1,206	11,387	2,342	1
Harding	.....	.....	.....	.....
Washington	79	954	.....	.....
Zulach	3	2,331	.....	.....
Jackson	334	.....	.....	.....
Total	31,341	91,328	18,617	2,890

The foregoing returns and estimates show the relative rank of the infant sheep industry as compared with the other branches of the animal industry in the State, also give a correct basis for estimating approximately the actual number of sheep in the State. To the whole number of sheep reported by assessors there should be added fully one-fourth, and to this number the increase of sheep brought into the State and the lamb crop of 1891. This would, after making all necessary deductions for mutton sales, losses, etc., give the number of sheep in South Dakota on January 1, 1892, as 534,894 head, valued at $1,872,130. The wool clip for 1891 was nearly two million pounds, which, with the sales of mutton, brought to the growers over a half million dollars during the year 1891. The actual value of the sheep industry of South Dakota at this writing is not far from a total valuation of five million dollars.

GENERAL FACTS ABOUT THE INDUSTRY.

Sheep husbandry is a new and undeveloped industry of South Dakota, and it will be some time before it settles down to a permanent basis. Some essential facts relative to the adaptability of sheep as a profitable branch of animal industry have already been demonstrated. It now remains for time and experience to show what methods of management and what class of sheep are best for this section of country.

At present the class of sheep most numerous in the State, the bulk of which has been brought here from other States and Territories during the past three years, are Merinos, their grades and crosses. Especially is this true of all the large flocks of 500 and upward. Flocks which number less than 500 are mainly owned by the general farmer and consist more largely of the mutton breeds, in which the blood of the Downs predominates, the Shropshire being a leading favorite. At present throughout the State the Shropshire ram is used almost as extensively as the Merino, especially pure-bred rams. So general are these two breeds in the State that when sheep-owners are asked what class of sheep are most numerous in this country, they invariably respond by saying, "Merino and Shropshire, their grades or crosses." In almost every county, in addition to the Merino and Shropshire sheep, there will also be found flocks of other mutton breeds, both middle-wools and the long-wools, but generally the sheep most numerous throughout the State are the Merinos.

The holdings of sheep are generally small, except those of companies or corporations. The general range of numbers is from a dozen head to 1,000, the latter being now regarded as a large flock. The "farmer flocks" usually number from 200 to 400, while the holdings of the companies, speculators, and larger sheep-owners run from 500 to 1,000 head and upward.

All land not under cultivation in South Dakota affords excellent pasture for sheep because it is so well grassed over. If the live stock

were increased a hundredfold it would not be exhausted or even wholly utilized. There is no richer or more abundant native pasturage west of the Mississippi. A considerable portion of this uncultivated area is Government land, or the property of non-residents, and consists of level or rolling prairie land. Even the rough and hilly portions of the State are covered with nutritious grass of the buffalo, gramma or blue-joint varieties, which afford grazing almost the entire year, but are not at present much used for winter pasturage.

The supply of water is mainly from wells 20 to 200 feet in depth, on the farms and ranches which are not accessible to the creeks and rivers. In some localities springs afford the necessary water for stock. There is very little timber; therefore, whatever shelter or shade is necessary, outside of the hills and coulees, has to be provided by the flockmaster. But such conveniences are not absolutely necessary except during the occasional storms of winter.

The general character of the soil of the area mostly used now for sheep pastures is what may be termed good farm land. On the level and undulating prairies it consists of a rich, deep, black, and calcareous soil, with a light clay or lime subsoil. In some places there is considerable sand. In the rough and hilly portions of the State the soil is sandy and gravelly, particularly along the bluffs and banks of ravines. This grazing land is much sought by the larger sheep-owners because it is practically free pasturage, and the abundance and character of the wild grasses make it very desirable for sheep. Usually a range of this sort is sufficiently remote from the cultivated lands to make herding quite inexpensive.

The annual loss of sheep from exposure to weather or from depredations of wolves or other wild animals is remarkably small, and from other sources it is equally so, considering the inexperience of most of the sheepmen. The loss from wolves seldom exceeds 2 per cent, and the average is not above 1 per cent. The sheep mortality resulting from exposure is hardly worth considering. In some extreme cases of neglect it has been as great as 10 per cent, but the general average reported for the State does not exceed from 2 to 3 per cent.

It is interesting, in view of the number of sheep brought into the State, to note the effect of climate on the constitution of the animals or the character of the fleece, as reported by the sheep-owners themselves. Sheep are mainly brought in from the West, although quite large numbers come from the East. It is the general and prevailing belief that after the first season or acclimation there is a general improvement both of wool and constitution. The wool of the Eastern sheep becomes drier and does not show so much oil and yolk, yet the fleece appears more compact and a longer fiber is produced. It is also believed that the size of carcass is increased and the amount of wool augmented about 25 per cent. Western sheep, on account of better care and more abundant feed from being run in smaller bands, show marked improvement.

In the farming districts the wool becomes heavier on account of dust from the fields, and in those localities does not grade so well. On this subject representative sheepmen express themselves as follows:

A. H. Rogers, of Aurora County, says:

Wool has good, strong fiber, but on account of dry climate shows very little oil or yolk. Sheep, whether imported or natives, are extremely healthy.

J. B. Geddis, of Beadle County, president of South Dakota Wool-Growers' Association:

Wool improves, also the constitution, after the first season.

M. F. Greeley, of Deuel County:

The first winter is hard on them, with some loss almost invariably; afterward improve on what they ever have been, every way.

F. M. Hopkins, of Edmunds County:

Wool increases in weight from 2 to 3 pounds per head after the first season, sheep also are larger and stronger; but are liable to a loss of 3 per cent the first year.

The rams used comprise various breeds, grades, and ages. As the flocks number from a dozen head upwards to one or more thousands it is not strange that a great variety of bucks are used. The larger owners, known distinctively as sheepmen, generally confine themselves to either the Merinos, pure bred and grades, or Shropshires, pure-bred and grades. Some use the Merino bucks two years and then put in Shropshires for two years, thus alternating.

Where the ram is allowed to run with the flocks constantly, from 40 to 50 ewes are given each; but when they are thoroughbred, from 75 to 100 are given each ram.

The usual time for turning in the rams is during November or December. Some turn them in as early as September, but this is not the rule unless the main object is the producing of early lambs. The mutton breeds are usually bred earlier than the Merinos. Most of the South Dakota sheep-owners wisely practice hand breeding and use a better class of bucks. After all the ewes are bred the rams are allowed to run with the flock until about shearing time. As most of the flocks are small this practice is common. In the larger flocks the method is to let the rams run with the flocks from four to six weeks, and hand breeding is not attempted. The rams, after the season, are kept with the flock of wethers.

The average per cent of lambs raised varies somewhat, the mutton breeds making a larger showing than the Merinos. Flockmasters variously estimate the per cent from 75 to 95. The average for all classes of sheep will not fall much, if any, short of 85 per cent. The percentage of ewes in the flock that fail to breed is quite small, and is estimated at from 1 to 5 per cent each year.

In South Dakota the general custom is to provide both feed and shelter during winter whenever it is necessary from severe or stormy

weather. The chief feed consists of prairie hay and straw. The shelter consists of everything from the cheaply constructed low and open sheds to good barns. The ordinary shed is board sides, covered with hay or straw, and sometimes shingles or common boards. A shed about 24 by 100, 7 feet high, roof with one-third pitch, sides made of shiplap or common boards. Ventilation is pretty well provided for, but so arranged as to keep out the snow.

The flockmasters of this State, especially those living east of the Missouri River, are also landowners, whose farms are worth all the way from $2 to $20 per acre, the value depending on the location, character of soil, and improvements. A great many both own and lease land. The leases are confined to school land and land held by nonresidents. The school lands are leased for 1, 3, or 5 cents per acre. In the central and western portion of the State the range is of such almost unlimited extent that the grazing land is practically free, yet nearly every sheepman owns his 160 or 640 acre farm, his place of residence, with improvements, where he raises his own feed and winters his stock.

"Is the main object to produce wool or mutton?" was a query submitted to fifty representative sheepmen in South Dakota. Thirty-six replies were received from men engaged in sheep husbandry in nearly as many counties. Two replied that mutton was the main object, ten said that it was wool, while twenty-four insisted and maintained that both wool and mutton were.

May or June is the usual time for shearing sheep. The shearing is done at home in the barns or on a floor in the sheds. The wool is usually sold to a local buyer, if possible; if not, consigned to Minneapolis, Chicago, or Eastern markets to commission merchants.

Most of the wool produced in South Dakota may be classed generally as fine or medium. The five grades are fine, medium and heavy fine, low medium, fine medium, choice medium and coarse. The sheep-owners realize from 12 to 20 cents per pound. The gross price is from 2 to 3 cents more. As South Dakota has all classes of sheep, likewise all classes of wool are produced. The average weights of fleeces range for medium and coarse wool from 6 to 9 pounds, and fine from 7 to 10 pounds, an average of not less than 7 or 7¼ pounds for the whole State. The wool and mutton that are not sold at home go to distant markets by consignments; the wool to Chicago, Minneapolis, St. Louis, Philadelphia, and Boston, the mutton to Chicago, St. Paul, and Sioux City.

The number of sheep disposed of annually from the flock by the sheep-owners of this State is comparatively small. There are very few that dispose of stockers, in fact many more stockers are purchased by the sheepmen generally than are sold for the markets. The majority sell a few lambs or aged wethers and the dispersions are mainly confined to that class. When but a few head are sold these go to the local butcher at 4 cents per pound and upward. Those who sell annually

a portion of the flock do not at present permit the number to exceed from 10 to 30 per cent. Some of the larger owners or speculators ship car lots to Chicago, St. Paul, Omaha, or Sioux City, which have so far realized the shipper from $3 to $5 per head, depending somewhat on the class of sheep. Stockers brought last season from $3.25 to $4 and muttons $3.50 to $4.50. F. M. Hopkins, of Roscoe, sold 200 four-months lambs at ranch for $2 per head. The weight of sheep sold for mutton varies from 80 to 150 pounds, the average being about 100 to 110 pounds when shipped. Lambs when sold early usually weigh about 55 pounds, or if held until fall about 75 pounds.

Besides feed the principal item of expense in sheep-raising is wages for herders, shearing, and day labor for haying. The usual wages for men by the year, board included, is from $16 to $20 per month; for boys as herders, $8 to $10. Day laborers during haying receive from $1 to $1.50 per day. For shearing about an average of 6 cents per head or $2.50 per day is paid. The average cost per sheep a year, all expenses, is variously computed, the lowest estimate being 35 cents and the highest $1.50. Experienced men place the cost at 50 cents to $1, depending on the size of the flock. Probably for a flock of 1,000 or upward, with good management, the annual cost could be safely placed at from 50 to 75 cents, the amount, as sheep husbandry is now conducted, being about $1 or a little less. The smaller sheep-owners do most of their own work, and the herding is done by boys. The items of expense to be considered are shelter, feed, wages, and interest on the investment. The "promoters" estimate of annual cost per head as shown in the North Dakota report is not much out of the way, especially with skillful and prudent management.

In regard to the local advantages for sheep husbandry in South Dakota, sheep-owners in every part of the State express themselves well satisfied that they are unexcelled anywhere in the United States. On this point both the older as well as the later flock-masters are quite agreed in all parts of the State. Among the special advantages claimed in behalf of sheep husbandry, the sheep-owners mention the following: Abundance of nutritious grasses for grazing during most of the year; plenty of prairie hay for the cutting to sustain the flocks when the range is covered with snow; cheap range, with elevated lands, having a dry, cool, and pure atmosphere; freedom from disease, also the absence of undue moisture; natural adaptability of climate, soil, and pasture for sheep; dry winters, with but little snow, and consequent short feeding season; few wild animals. A Spink County flockmaster says that the farmers "would go broke without sheep." Another resident of a dozen years' experience says: "It is the best and about the only sure thing we can do to keep a mortgage off or from finally taking the farm." The abundance as well as superior and nutritious quality of the native grasses and hay are considered a leading advantage, also the constant supply of good water from the streams or wells.

While it is true that the sheep-owners have no real cause for discouragement because of any serious drawbacks or disadvantages encountered, there are evidently certain obstacles which should be enumerated in a truthful review of the industry. The chief obstacles encountered so far are careless farming, inexperience in handling sheep, liability to ravages of wolves, and, in older settled portions of the States, from dogs; an occasional severe winter or unusual drought; a prairie fire or a blizzard; high winds, which carry dust or other foreign matter into the fleece, especially in those localities where there is considerable plowed land; scarcity of timber and its beneficent shade; wire-fenced pastures, and the ordinary disadvantages to the Northwest as to long distance from market.

Disease among sheep in Dakota is practically unknown. Sometimes sheep brought in from the South and West are affected with scab, but it is soon eradicated. Occasionally a case of sniffles or grub in the head occurs, but as a rule sheep are quite healthy and vigorous. Last spring many flocks were affected with ticks, but by properly dipping they were easily eradicated.

From the expressions of sheepmen the outlook is very bright for the industry, and no other agricultural pursuit will compare with it. It promises more profit for the capital and labor invested than any other branch of agriculture. The demand for sheep is only limited by the ability of farmers to purchase. No doubt many inexperienced men are paying exorbitant prices for their stock, and many such will meet with failure. This, of course, will have a tendency to check the present unprecedented demand.

Unless some unforeseen conditions should arise, it is the opinion of sheepmen who have had some years experience that South Dakota will eventually rank high, if it does not lead the Northwest, for successful and profitable sheep husbandry. One successful and experienced wool-grower believes that within five years there will be 100 sheep where now there is one. Had it been possible to secure the sheep at fair prices fully a half million head would have been brought into the State during 1891. Every farmer who is able to purchase and care for sheep is eager to get a start, because the experience so far has demonstrated that the business is both safe and profitable. The growth of the industry during the past year is illustrated by the progress made in Beadle County. In 1890 it had 7,500 sheep, and in 1891 the number of mature sheep had increased to fully 20,000, to say nothing of the increase of lambs. Beadle County is simply an average of most of the counties east of the Missouri, and as soon as the territory west of the Missouri River is opened the surplus will be readily provided for in that way. But it will require several million sheep to utilize the grasses now annually going to waste.

The best methods for profitably conducting sheep husbandry in South Dakota is a matter of grave importance, and only a few general rules

can now be laid down as applicable to the existing conditions. It is safest to begin sheep husbandry for a permanent basis in connection with general farming. Begin with a few young sheep, and as the flock increases learn the proper management. It is unwise to start with more than one can properly feed, shelter, and graze. Use none but first-class rams, and breed so that lambs will come when the sheep are out on new grass. Let wool and mutton be the main consideration, and each year dispose of the wool and feed the culls of the flock and the wethers for mutton. A person who has had experience in handling sheep and desires to make it an almost exclusive business had better locate in the rough, hilly regions where water is available and cheap grazing lands are unlimited, then get all the sheep that can be handled properly. Provide, of course, cheap sheds with plenty of ventilation and abundant hay for such times as the sheep are unsafe on the open range, but even in winter, when the weather will permit, let the sheep run out. As an experienced sheep-owner, at the annual meeting of Dakota sheepmen, in a well-prepared paper, stated:

Brains must enter into this work. Attention must be paid to every detail. Feed must be supplied in abundance—be properly put up and judiciously fed. Sheep must be kept full the year round, if the undertaking is to be made a success, and they must be kept comfortable, if the very best results are to be expected. Sheep-raising will have its ups and downs, its "booms" and its "busts," just like everything else; but with so many winning cards the Dakota man who sticks to it is bound to win. When a man begins he must go slow at first, but cling to it. Cull his flock and improve it. Aim to keep as many as possible of good square mother sheep and their best ewe lambs. Raise lots of cornstalks, oats in the bundle, millet, and pease. If your land is plowed and if you wish to get good prices and big fleeces, and whether your neighbor "goes in" or "out" stand by your flock and they will stand by you. The man who does this intelligently can never make a failure of sheep-raising in Dakota.

CARE AND PREPARATION OF DAKOTA WOOLS.

After a personal inspection of a number of Dakota wool clips, both at the farm and in the market at Minneapolis, the writer saw the bad effects of careless and inexperienced handling of wool, which entailed unnecessary loss. With a view to pointing out the way of avoiding this hardship to the sheep-owner and maintaining such a reputation for Dakota wools as their merits deserve, J. F. Nichols, of Minneapolis, an expert on merchantable wools, who is thoroughly familiar with the wools of the Northwest, at my request furnished the following on the care and preparation of wools:

Growers in the Dakotas and the Northwest are very careless in letting their sheep run to straw stacks, feeding from racks, and in many other ways letting their fleeces get loaded with chaff, straw, seed, etc. The first thing most of the growers in the Northwest want to learn is to keep extraneous matter out of the wool. Place feed containing chaff, seed, etc., on the ground, so the sheep can eat it without getting it in their wool. Feed will not be wasted if only enough for a day is put out at a time. Chaff, straw, burrs, and seeds hurt the sale of wool from 2 to 10 cents per pound, besides, it is the cause of much dissatisfaction on both the buyer and seller's part.

There is no excuse for allowing the wool to get full of chaff, straw, or seeds, and when the growers realize the loss they have to stand on such wool they will stop it at once by fencing their straw stacks so sheep can not get at them, and also by dispensing with feeding racks. All taglocks and the worst of the greasy skirting should be removed previous to or at the time of shearing, and never under any circumstances should be tied up with the fleece. The Dakota and Minnesota growers do not realize the importance of having each fleece properly tied. Wool can not be graded as satisfactorily when received in market in a broken condition. Wool should be put up sheared side out, each fleece separate and carefully tied in a uniform package. Use wool-twine for tying the fleece; two strings around the fleece each way are enough for ordinary fleece. For a large or very short wool fleece three strings each way may be necessary to keep the fleece together properly. Do not use any more twine than is necessary. A wool-box is a good thing to use when tying fleeces, as it insures a uniform package. Wool can be rolled and tied very nicely by hand without a box, and some buyers even prefer the fleeces tied by hand. Do not tie the fleece any harder than is necessary, as unwashed wool when tied too solidly has the appearance of being heavy. After the wool is ready for market the growers should look for a cash market to dispose of their wool. The Minnesota and Dakota growers can not afford to send their wool to commission houses and wait from three months to a year for returns. Either send your wool to a firm who buys it outright and makes prompt returns upon arrival of the wool, or sell it to the best advantage you can at home for cash or its equivalent. Growers having a dingy and heavy earthy wool should understand that their wool is not worth as much per pound unwashed as bright, light wool. (Most of the wool from the Dakotas is earthy.) You usually get more for your wool on account of the weight of fleece than those who have the bright, light wool in the Eastern States. For example, a bright fleece of light wool worth 23 cents would weigh about 6 pounds and would bring $1.38 for the fleece. The same fleece in the Dakotas, being earthy, would weigh about 8 pounds, and at 18 cents the fleece would bring $1.44. On some fine grades the difference in weight per fleece is more in the favor of the Dakota growers. As your land and feed are cheaper you have considerable advantage over the Eastern growers. Sheep will always pay the growers in the Dakotas. Provide feed and shelter for the sheep to avoid losses in winter; look out for scab; get some good dip for your sheep at once. A cold water dip is good and easy to use. It would pay every grower to dip his sheep after shearing each season. By doing so you will keep scab, ticks, etc., away and the new growth of wool will be stronger, have a better staple, and the fleece at shearing time will be heavier. There are many associations being formed in the Dakotas. If you are raising sheep it will pay you to attend the association meetings. Go to each meeting you can with your mind made up to tell your brother grower how you have conquered difficulties in your flock. Your brother growers will only be too glad to tell you how they conquered other difficulties in their flocks. By comparing notes each member will get information that may some time save heavy losses. There is a bright future for the sheep industry in the Dakotas, and it is the earnest hope of the writer that this article may lead to better handling of wool in the future.

SHEEP PROMOTERS IN SOUTH DAKOTA.

In my report on the sheep industry of North Dakota a section was devoted to a brief discussion of "promoters," and what is said there of North Dakota is substantially true of South Dakota, with perhaps the exception of a less amount of unscrupulous operations by the promoters in the latter State. In fact, speculators here have not put out as many sheep as those of North Dakota.

Regarding the operations of "promoters" in South Dakota and its effect on the industry, Mr. M. F. Greeley, of Deuel County, has prepared the following statement for this report:

Bringing large flocks of sheep into a new country to let on shares or to sell on time must certainly materially affect in some way the sheep industry. There can be no doubt but that increasing the number of sheep in a country where land is very cheap—almost free—and peculiarly well adapted to wool and mutton production must help somebody. There are evils connected with this way of stocking up which do not at first appear.

In the first place, men of inexperience and shiftless habits will rent sheep when they would never think of buying them, and when they fail from inexperience or nonattention to business the industry suffers and other men who, with encouragement, would make good and successful shepherds are more or less depressed. Again, when the farmer has but a half interest in a flock he is much less apt, I find, to give them the attention and care he would if he owned them all. And the fact is, that when a large flock of poor sheep have been properly housed and fed twelve months in a northern climate a pretty large hole has been made into half the income, and sometimes with a loss to make up—it is all gone. Of course this is discouraging, depressing, and often disastrous.

Buying on time, I think, is far ahead of "renting" in every way. The man having all of the income and loss strains every nerve to make the one as large and the other as small as good care and every attention will make them. This is human nature only. If they be good, thrifty young ewes, and acclimated, he can well afford to pay a good price with pretty high interest, and with suitable surroundings and a little experience and common sense is perfectly safe in doing so. I have known more than one man to pay for the flock the first year, and in a few cases to have a little money left.

But there is another side to this. Many of the large flocks brought into Dakota to sell "on time" are the culls of a whole county, or are in poor condition late in the fall, or have been exposed to scab or other disease. This class of sheep could prove nothing but a loss to thoroughgoing sheepmen. But they are very likely to be sold to inexperienced farmers for reasons only too evident. Here again come loss and disappointment, and no end of discouragement to the sheep business. Possibly the men who rent or sell these sheep are all right, but they have employed inexperienced or unprincipled buyers. Again, sheep brought in large flocks are nearly always unacclimated, and if from the East cause serious trouble, if not loss.

Of course, some of our most successful farmers rent farms, but as a rule they do not. Good farmers are able and anxious to secure homes of their own. The average farmer who has to rent or buy on long time is not our most thrifty and farseeing one. There are, of course, many exceptions to this. I know of lots of them. So, in many instances, those who have shipped in the sheep have done well, and the ones who have rented or bought on time have been equally prosperous, and have thus been enabled to start, when without assistance they perhaps never would. I believe the future of the sheep industry in South Dakota would be more promising had nothing of this kind ever been undertaken.

EXPERIENCE AND OPINIONS OF REPRESENTATIVE SHEEPMEN.

In making investigations of the sheep industry of South Dakota the writer had considerable correspondence as well as numerous interviews with representative sheep owners, from which the following extracts have been carefully compiled with reference to essential facts bearing on the different phases of the industry in the various sections of the State. These men have acquired some valuable information by experi-

ence, and are therefore well qualified to speak authoritatively upon the matters which they discuss, and their opinions deserve careful consideration, because they reflect in brief certain conditions and possibilities of the sheep industry of this State that are not covered elsewhere in this report, and yet are of sufficient importance to become a part of it. Quite a variety of topics is covered in the following selected extracts from practical flockmasters of South Dakota:

A. J. Bonesteel, Farnsworth, Sanborn County:

Our State is fast coming to the front as one of the leading sheep States. It is the least trouble to keep them free from disease, and the native grasses are just the right thing to make them do well.

P. J. Runser, Redfield, Spink County:

I have handled from 200 to 500 sheep for the last eight years, at a handsome profit above all care and feed. I have fed some grain during winter with good results, but have wintered mostly on wild hay, millet, and cornstalks. I pasture my flock during spring and summer; after harvest I run them on farm. I commenced with coarse grades and have bred to fine wools, which I much prefer.

F. M. Stein, Clark, Clark County:

I believe there is not a State in the Union so well adapted to sheep-raising as South Dakota. We have over 40,000 sheep in Clark County alone, and it is only a question of a few years when South Dakota will stand at the head as a wool-growing State. Our people are beginning to realize that it pays to raise sheep and does not pay to raise wheat.

George D. Elderkin, De Smet, Kingsbury County.

I think our farmers should commence on a moderate scale and learn the business of rearing sheep, allowing the increase of flock to be proportionate with increase of knowledge. Dakota is wild over sheep and the tendency is to overdo. Many are investing in large flocks without having any previous experience, and such will probably lose to a greater or less extent.

O. O. England, Templeton, Jerauld County:

I have used the following home-made dip with satisfactory results in ridding my flock of ticks and the sheep-louse: I use 3 pounds of tobacco stems steeped in 10 gallons of water. Fifty gallons of this dip will do for 75 lambs and kill all ticks and lice.

Wilfred Baker, Wolsey, Beadle County:

The last five years have been so dry that it mostly used up the grain and wheat farming, and it actually drove the farmers into stock-raising; but the cattle and beef markets were poor, and the corn crop too uncertain for pork-raising, so the business of wool and mutton raising took a wonderful boom, and the importation of sheep from other States has been most wonderful the last two years. In most cases it will prove a beneficial addition to the farmers, unless inexperienced men get too large a flock to begin with.

C. A. Fowler, Huron, Beadle County:

We have a beautiful country, with a fertile soil and healthful climate; but the insufficiency of rainfall makes grain-raising unprofitable. But the great increase in the number of sheep shows that the attention of the farmers is turned towards this industry, which will relieve them from their depression and lift the mortgages off the farms. We think we have here a greater supply of subterranean water than any other locality, and hundreds of wells will be put down, and Dakota will "blossom as the rose." Have had experience with sheep ever since my boyhood days and take great interest in the business.

Frank M. Byrne, Miranda, Faulk County:

I think the Merinos are best adapted to our conditions. I prefer the Delaines. On account of our dry, cold winters and healthy climate I am of the opinion we can raise as good fleeces as can be raised in the world, and because of our distance from markets, making freight charges an important consideration, I think wool more profitable than mutton, and shall in future breed accordingly. I have been engaged in the sheep industry here three years.

G. B. Pope, Estelline, Hamlin County:

My sheep are paying 100 per cent profit now. We offset manure with the keeping expense, and the difference is in favor of the manure. This, of course, is where sheep are kept as an adjunct to mixed farming; on sheep ranges this will not apply. Western sheep do better here than Eastern sheep, as the latter do not thrive on our grass at first.

F. M. Hopkins, Roscoe, Edmunds County:

We have just wintered 800 head of sheep on hay and no grain. They were kept in the sheds forty days during the winter; balance of time they were out every day grazing. Total loss for the year past was 2 per cent. Lambs came during May, when the ewes have plenty of milk, and we are saving 90 per cent of lambs. Plenty of range in the hilly and rough lands, which will not be taken for a number of years; I mean Government lands. Plenty of hay in the sloughs in these rough lands.

J. B. Geddis, Virgil, Beadle County:

I have been in the sheep business for eight years and have never had any disease among the sheep or met with any losses, and have realized over 90 per cent of lambs each year, with a profit in wool and lambs of from 75 to 100 per cent on the investment. I graze them on wild prairie that does not cost any rent and feed millet in winter—have never fed any grain. The dry atmosphere is almost a sure preventive against disease. Dip twice a year, which destroys all ticks and improves the wool. Sheep always fat and ready for market.

D. Roberts, Faulkton, Faulk County:

South Dakota seems to be perfectly adapted to sheep-raising. Crops have failed for the last two years, and people are somewhat discouraged in raising grain and are all anxious to go into sheep. Hundreds will go into the business, as soon as they can get the sheep, who have never handled them before. I look for many failures among such; but the careful, industrious man has no cause to fail in sheep husbandry here.

David Hall, Ney, Sully County:

I have only been in the business about a year and ten months. If I get even as low a price for wool this year as last, it will more than pay for my sheep with the second clip and have $100 over. I have never fed any grain to my sheep since I owned them. The wild grass here makes the best hay for sheep when cut green in July or August. When crops are harvested sheep run at large without a herder, and wild animals never have attempted to molest them. Anyone can lease thousands of acres of loan companies for paying taxes, which amount from $10 to $18 per quarter section.

G. W. McLaughlin, Onida, Sully County:

I have had a flock of sheep in this, Sully County, S. Dak., for the last five years, and they have done well. Have had them out on shares part of the time. I get one-third of the wool and one-half increase, and they have paid me 30 to 40 per cent on the investment; have over 600 now. We do not need grain, and can take good mutton out of flock at any time. Hay can be put in stack for $1 to $1.50 per ton, and last winter we did not commence feeding hay until January 31, and a year ago commenced December 28.

S. L. Berry, Parker, Turner County:

South Dakota is conceded to be a very healthy climate for sheep-raising. With our natural pasture, healthy, high, and dry, we never hear of such a thing as foot-rot, and if properly cared for I do not think that there can be any better stock kept on the farm than a flock of 100 sheep. We have the advantage of cheap grain and hay for winter feeding. Our worst drawback is the heavy winds, which cause the dirt and dust to collect in the wool, thereby causing it to be heavy, a disadvantage when we come to sell, as buyers discriminate against dirty, heavy wool, as they call the South Dakota wools.

M. F. Greeley, Gary, Deuel County:

Sheep are never sick or ailing in this county. Range is free or nearly so, and being very hilly and stony and well-grassed, the business is profitable and the income sure. The heavy mutton breeds, pure, will not be a success here, as much of the year feed is short, but grades of either the Merino or mutton sheep keep fat the year round if fed enough wild hay during winter and fall. The greatest drawback is the fact that Dakota seems to be the top sieve of Uncle Sam's fanning mill, and many of our farmers are culls—they make poor shepherds. This will always be a sheep country. We can raise them for mutton only. Better care and feed will ultimately improve our staple, which now is a little off.

D. J. Briggs, Broadland, Beadle County:

I have had sheep here only three years; have Merinos and grades; sheep have been extremely healthy; increase has been from 60 to 90 per cent; average weight of fleece has been 13½ pounds from Merinos, full blood, and 10 pounds from grades. There have been a good many Shropshire rams brought here the past year, and we are trying the crossing of them on full-blood Merinos, and are getting good, large lambs; don't know how well it will pay. This is without doubt one of the finest States in the West for sheep. The greatest drawback is the lack of water supply, and that is being overcome by means of artesian wells. We can raise an abundance of millet hay, and there is no better feed for sheep.

H. B. Lathrop, Redfield, Spink County:

I have been a resident of this county since the spring of 1880, consequently have had a pretty good chance to judge of the natural tendency of the climate, which is a little too dry for certainty of farming, which, with low prices and cost of freight, makes it very uncertain business. My observation is that this country is remarkably well adapted to sheep raising, and I believe that every quarter-section farm would be the better for having fifty sheep on it. It being a dry country makes it favorable to the industry so far as health is concerned. Our worst drawback is lack of feed, caused by want of moisture, in consequence of which we can not carry as many head per acre as in the more grassy regions. Dogs are a pest to us, especially common curs and bird dogs. In some localities wolves are quite troublesome. One of the worst drawbacks is shiftless, careless shepherds.

Isaac M. George, Brookings, Brookings County:

The sheep industry in this State is in its infancy. Most of the sheep are fine-wooled, shipped from the East by unprincipled men, and sold on time for enormous prices. But even under those circumstances the farmers are making money out of sheep. I am one of the oldest sheepmen in the county, and am ready to say that sheep husbandry is the salvation of South Dakota. I was a little more fortunate than some of my neighbors and paid cash for my sheep. I bought Shropshire grade ewes and bred to pure-bred Shropshire rams, which I think is the best breed of sheep in the world. I have wintered from four to five hundred every year, and seldom lose one during the winter. The last three winters I went through without any loss.

When I started with sheep I was in debt $3,000, but to-day I own a home worth $5,000, and my total indebtedness amounts to less than a thousand dollars, and it is sheep that did it.

A. H. Rogers, Plankinton, Aurora County:

In the fall of 1890 I bought in Wyoming 494 grade Merino ewes three and four years old. They cost $3.87½ cents per head. We had an unusually cold wet spell while my lambs were dropping; about 65 of my ewes failed to breed; but I have 318 as fine lambs as I ever saw. My wool clip averaged 6 pounds 3½ ounces. This low average is, I think, due to change of climate and the fact that they had only 10½ months' growth of wool, having been sheared in 1890, late in July, and this year middle of May. If sold at present offer my wool would bring me $200. We have any amount of land abandoned for farming, which yields the finest grasses for a sheep range. Water is readily obtained at from 20 to 175 feet. I bought my sheep in September, 1890, and did not feed them a mouthful of anything until February 6, 1891, at which time they were fit for mutton.

Correspondent of American Wool Reporter, Willow Lakes, S. Dak.:

The sheep industry in this section is growing very fast, in fact, I believe that North and South Dakota bid fair to be two of the largest wool-producing States in the Union. The number of sheep is increasing very fast. According to last spring's assessment we had in this county over 60,000, and there have been this fall over 5,000 more shipped into this county. All kinds of sheep are bred here, but the Merino and Shropshire are the two leading breeds. The climate seems to be perfectly adapted to sheep, being dry and not changeable. I came from Vermont and brought full-blood Merino sheep with me. They grow larger and shear much heavier here than there. In some localities the sheep graze all winter, not getting any hay whatever. Wool buyers, not being as numerous in this locality last season as we would like to see them (there being only one in this county), a great many were compelled to ship their own wool to commission men. Their prices not giving very good satisfaction, we would be very glad to have wool buyers more plentiful another season.

INSPECTION OF SHEEP.

AN ACT to amend chapter 135 of the laws of 1885 in relation to the inspection of sheep.

Be it enacted, etc., That section one, chapter one hundred and thirty-five of the laws of 1885, be amended to read as follows:

SEC. 1. In every county in this State containing two thousand sheep or more, the county commissioners shall appoint a sheep inspector, who shall be selected by the sheep-owners of the county at a meeting for that purpose; such inspector shall hold his office for the period of two years, unless removed for cause. Any inspector may act in any adjoining county having no inspector on the request of the commissioners thereof. The meeting mentioned in this section shall be called by the county commissioners, and they shall give notice of such meeting by notice published in a newspaper of the county for two successive weeks prior to the date of the meeting, and the first publication shall be at least twenty days before the day fixed for the meeting, and said notice shall give time and place of holding the same.

SEC. 2. That section two of chapter one hundred and thirty-five of the laws of 1885 be amended to read as follows: It shall be the duty of the sheep inspector whenever he shall have knowledge or information that any sheep within his jurisdiction have the scab or any other malignant contagious disease, to inspect said flock and report in writing the result of his inspection to the county auditor of his county, to be filed by him for reference for the county commissioners or any party concerned, and said inspector shall give to owner or agent directions for treatment, and require from same a report every month thereafter until the inspector is satisfied that the disease is cured, when he shall again inspect the flock and give his cer-

tificate of freedom from disease, and make report. The certificate of freedom mentioned in this section shall be a passport for all other counties in the State into which said sheep may be moved.

SEC. 3. That section four, chapter 135 of the laws of 1885, be amended to read as follows: The owner of any flock, or his agent in charge thereof, when the same if reported by the inspector to be so diseased, shall immediately house or herd the same, or keep in some inclosure so that they can not range upon any ground accustomed to be ranged upon by any other sheep, and shall restrain them from passing over or traveling upon any public highway or road. The owner of such sheep or his agent in charge thereof shall at once follow any directions for treatment prescribed by the inspector, and promptly and faithfully carry out the same until a cure is effected, and shall report to the inspector as provided in section 2, chapter 135 of the laws of 1885, being section 2352, Compiled Laws. In all cases where the owner of sheep or his agent in charge thereof believe themselves wronged by the report or action of the inspector, they may appeal to the veterinarian of the State agricultural college; such appeal to be made by notice in writing served upon the inspector and upon the county clerk. Within five days after the service of notice on the county clerk he shall forward all papers filed with him and referring to such matter to the said veterinarian aforesaid.

SEC. 4. That section 8, chapter 135 of the laws of 1885, be amended by striking out the words "register of deeds" where they occur in said section, placing the words "county auditor" in place thereof.

SEC. 5. That section 9, chapter 135 of the laws of 1885, be amended to read as follows: The inspector shall receive three dollars per day while necessarily employed in inspecting sheep, and all fines and penalties shall be paid to the county treasurer, to be set aside as an inspection fund.

SEC. 6. That section 11, chapter 135 of the laws of 1885, be amended to read as follows: Whenever any sheep inspector shall wilfully and falsely report any sheep to be affected with disease, or wilfully and falsely report any sheep inspected by him free from disease he shall forfeit his office as inspector and shall be subject to penalty of not less than twenty five dollars nor more than one hundred dollars.

SEC. 7. That section 14, chapter 135 of the laws of 1885, be amended by striking out the word "fees" wherever the same occurs in said section, and insert in place thereof the word "service."

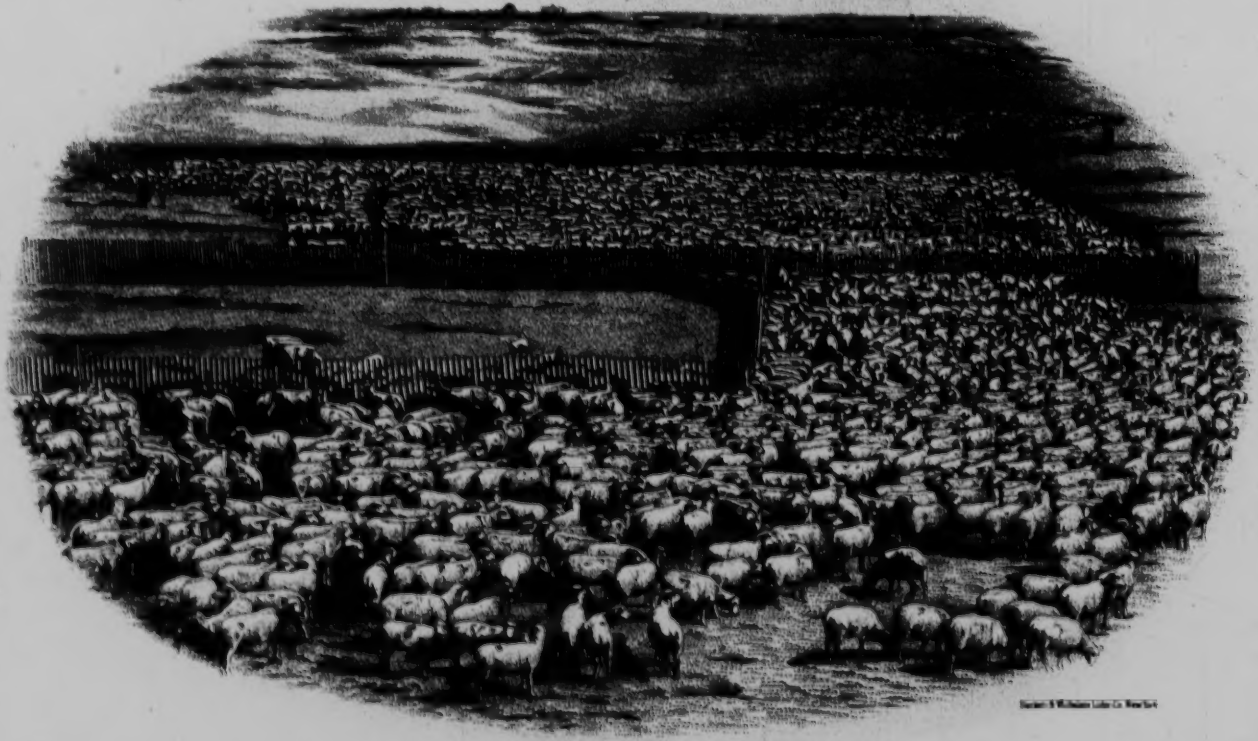
SEC. 8. *Repeal.* All acts and parts of acts inconsistent with this act are hereby repealed.

Approved, March 7, 1891.

SHEEP BARN AT GRAND FORKS, N. DAK.

"JUST IN FROM THE RANGE"—NORTHERN MONTANA.

FARM SCENE IN RED RIVER VALLEY, N. DAK.



SHEEP RANCH, NEAR CONWAY, N. DAK.

OXFORDDOWN SHEEP, WILMOT, S. DAK.

CHAPTER II.

THE SHEEP INDUSTRY IN WYOMING, COLORADO, AND UTAH.

WYOMING.

The new State of Wyoming ranks high as a wool and sheep producing region. When it is considered how short a time sheep-raising has been an important branch of its animal industry, its success is marked. The industry now bids fair to become the greatest live-stock interest instead of the least, as it has been heretofore. Stock-raisers of Wyoming, as well as those of Montana and South Dakota, realize as never before the importance of raising sheep, and that cattle are not the only profitable class of domestic animals. The depression which has befallen the cattle business set men to thinking, and they were not long in discovering that a country which will sustain cattle is not wholly unsuited for sheep. Five years of practical experience convinced them that there is more profit in sheep than there is in cattle, and stockmen seeking localities for a stock ranch also learned that one-third the capital required to stock up with cattle is sufficient to start with sheep, and this was a strong inducement to try sheep rather than cattle.

Wyoming, during its Territorial days, was noted for its live-stock interests—cattle-raising being in the lead. The best ranges were fairly well stocked with cattle or horses. Previous to 1870 the live-stock industry was of little consequence, but soon thereafter the grazing lands came into demand, and the number of animals increased rapidly every year until 1884, when it was estimated that there were about 2,000,000 head of cattle, with a few sheep and horses; and the desirable ranges were generally occupied. Many wealthy cattle companies had been formed, Eastern and foreign capital poured into the Territory, and cattle speculation was the craze. It was difficult for the sheepmen to get much of a foothold, as they were ten years behind the cattlemen; besides, they lacked the financial backing of the cattlemen. They had to rely upon their own resources strictly, and had necessarily to select ranges not occupied with cattle. Since 1884 the cattle business has declined, and the sheep business advanced until at the present time there are more sheep than cattle in Wyoming, and as the State improves the number of sheep as well as horses will increase, and together they will excel the cattle business in importance. The grazing lands of the State are better suited to horses and sheep than to cattle, as they are close grazers, and much of the pasturage consists of short grass with some browsing.

Of the ten counties of the State the following are the principal sheep

counties, ranking as to number of sheep in the order named: Carbon, Uinta, Fremont, Albany, Sweetwater, and Laramie. The four remaining counties have a few thousand sheep, but cattle and horses now represent the principal live-stock interests in those counties.

The breed or class of sheep most numerous in the State are of the Merino type, mainly of Spanish blood, with a fair representation of the French. The coarse-wool Mexican sheep is strongly represented in many flocks as the basis, but has been crossed with the Merino until many of the original and objectionable qualities have been more or less eradicated. The Mexican foundation, however, has been very serviceable to the industry because of their adaptability to the country and the methods in vogue of handling sheep; however, a large number of the first sheep brought into the Territory came from Oregon and California, mainly large-bodied Merino grades. The class of sheep brought in from the States east were more or less improved, many being pure breeds. Nearly all the breeding rams were thoroughbred. During the past five years quite a number of Cotswold, Southdown, and Shropshire bucks have been used, and generally with satisfactory results. At present the Shropshire rams are much favored. The cross produces an animal which gives great satisfaction. There is probably no other State or Territory in the open-range country that has uniformly so fine a class of sheep. A marked characteristic of the sheep of Wyoming is their large bodies and heavy fleeces. This is attributed largely to the climate. Owing to this characteristic the sheepmen have made more money during the last two or three years than their fellow craftsmen on the open ranges. The larger carcass gives superior mutton qualities.

The grazing land is a hilly and mountainous country and open plains. In the southeast part of the State the plains are fertile and produce buffalo, bunch, and a native blue grass in abundance, while the desert or "bad lands" of the plains, in Carbon and Sweetwater counties, produce the various kinds of sage, such as the common, sweet, salt, and black sages, together with bunch grass. During winter the sheep feed on these sages or browse on the sagebrush and greasewood among the foothills; and when water is not abundant or accessible on the plains, they have to depend on the snow for water. During summer the water is supplied by the creeks and running streams or springs, which have their source in the mountains. Timber is of course scarce and is not needed for shade, as in the warmer climates. The natural protection in winter consists of hills, bluffs, and mountains.

Sheep that are brought in from other States usually do well and become acclimated without serious loss or deterioration. This is especially true of sheep brought from the North or West, while those brought from the East usually require the first year for acclimation. After that they seem to do as well as the home-raised animals, and improve in size and weight of fleece. Notwithstanding the method of letting the

sheep depend upon their own resources for feed during the winter, it is a fact that healthy and strong sheep usually come through the winter in good form and condition.

The class of rams mostly used now are full-blooded Merinos, which includes a number of the French. Heretofore, many of the flock-masters have been content to use home-grown or grade bucks; but as the methods improve and profits increase, the quality of the bucks improves. As mentioned before, the mutton breed bucks are being used with satisfactory results. The cross of the Shropshire ram on the Merino ewe produces a hardy and profitable animal of good size, with an average-weight fleece of high-priced wool. The rams used are two years old and upwards. The number of ewes given each ram varies from 35 to 75, an average of from 40 to 50 ewes. The ram remains with the flock about thirty days from the middle of December; however, some flock-masters permit the rams to run with the flock until spring or shearing time.

The average per cent of lambs raised varies according to circumstances, governed by the favorable or unfavorable location of the range. It is a rare occurrence to raise less than 75 per cent of the lambs; frequently they save as high as 80 or 90 per cent. If the ewes are in good condition and mature they seldom fail to breed, unless the rams are taken away within thirty days, when from 5 to 10 per cent fail to breed.

It is remarkable how little winter feeding is done. As a rule no grain is fed, except in rare cases, when the flock is favorably located near the railroad, or when a few choice rams or other pure-bred sheep are held where grain is accessible. The usual winter feeding consists of hay fed during a few stormy days in midwinter, not to exceed an average of a dozen days. Sheds for protection are as rare a provision as winter feeding. The flockmaster trusts to nature, and her provisions consist of the mountain sides, canyons, willow, or sagebrush, bluffs, and foothills. The severe storms come from the east or the north. The exceptional artificial shelter consists of underground stables or cheaply constructed sheds.

Very little land is owned or leased by the sheepmen. They use for the greater part Government land. The portion of the land that constitutes the home ranch is usually small in area and contains the winter corral, dipping pens, and perhaps some hay land; this small tract is frequently leased.

The main object of sheep-raising in Wyoming has been the production of wool, but the objects now seem to be both wool and mutton, and the latter, with the class of sheep now grown, is at present the most profitable. But sales tend to the decimation of the flocks, though it is fortunate that the surplus sheep can be disposed of profitably.

Sheep-shearing in this State takes place either during May or June. When a gang of sheep-shearers make their appearance in a county, a date is fixed and a suitable place arranged for the shearing, which is

done on a wholesale plan. The wool is immediately sacked and taken to the nearest railroad point for storage and shipment. When the flocks are within reasonable distance of railroad towns, the sheep are driven in at the rate of 1,000 per day—that number being shorn daily by an average crew of California shearers, who are mostly employed as experts, and who receive from 7 to 10 cents per head for shearing. Where it is possible, the wool is sold at the nearest railroad to local buyers. The bulk of the wool is consigned to commission houses in Chicago or Boston. A large amount of the wool has to be freighted on wagons 200 miles to reach a railroad station. The present system of disposing of wool and the long and high-priced railroad haul is a very serious difficulty encountered by Wyoming sheepmen.

The classes of wool produced are fine, fine medium, and coarse or carpet wool. The net price realized for the best Merino wool is 12 to 19 cents per pound; the coarse wool less. The average weight of the fleece for fine and fine medium ranges from 6 to 9 pounds per sheep. Many flocks, however, average 9 to 10 pounds per fleece. The general average for the State is about 7 pounds.

The best distant market for muttons is Chicago. The best buyers for wethers are the feeders in Nebraska and the Mississippi Valley. The local market is very good for a moderate supply of fat sheep, and it is constantly improving as the population increases. The proportion of the flock that is annually disposed of as feeders and stockers varies from 10 to 50 per cent. The sheepmen living within easy reach of railroads dispose of a larger per cent than those who are more distant. A conservative estimate of the number disposed of annually will not exceed the increase of the flocks under existing conditions. The best wethers are sold to Eastern feeders at the ranch, and bring about $3 per head, while the culls and aged ewes bring from $2 to $2.50 each. Occasionally shipments are made to Chicago and net the grower from $3 to $3.50 per head, after paying the high freight rates from the mountains—a grand tribute to the individual value of the sheep. The average weight of 3-year old wethers shipped from the State can safely be placed at 115 pounds. Griff Edwards, of Rock Springs, at one time in 1888 shipped 6,300 3-year-old wethers to Chicago and their average weight at destination was 135 pounds. This shipment, however, represents the best maximum weight, which exceeds the usual average. Taking the various classes, the range of mature wethers will run from 90 to 150 pounds.

The average cost per sheep a year, all expenses, is variously estimated from 30 cents to $1. The lowest estimates come from Albany, Sweetwater, and Fremont counties. The average annual cost per head should not be estimated at less than 50 cents. Herders and ranch hands employed are usually foreigners or Mexicans. The herders receive from $30 to $40 per month, and the ranch hands $20 to $30 per month by the year.

The principal disadvantages and difficulties encountered by the sheepmen of Wyoming are the fencing of the free range or public land by large corporations, which often includes the hay land and watering places, and especially desirable ranges. The depredation of wild animals is a serious obstacle, which demands the constant watchfulness of the herders day and night to prevent loss; scarcity of competent herders and ranch hands to properly care for the sheep; storms and deep snows; scarcity of railroads for transporting sheep and wool; impassable roads or long, tedious drives over rough or barren countries to reach shipping stations; scarcity of water in many places on the plains, and last, but not least, the present system of selling wool by consigning to Eastern commission houses, with its consequent long railroad hauls and longer freight bills, with uncertainty as to the time and amount of returns. As the profits of the business depend on the wool sales it works a hardship on the producer to be at the mercy of his commission merchant for returns.

The local advantages of the State for sheep husbandry may be mentioned briefly, as follows: It is a natural grazing country, specially adapted to pastoral pursuits. No portion of the Rocky Mountain country is better suited in every way for stock-raising than Wyoming. Although the State is located in the arid regions, yet by virtue of its characteristics of soil, rainfall, elevation, and natural food supply throughout the entire year, this comparatively dry area is specially adapted to grazing purposes, and the larger portion of the State will never be available for anything else. The large area and great variety of grazing lands permit the system of frequent changes of range, which keeps the sheep in a thrifty and growing condition. There is an abundance of free public land, and there are no contagious diseases, hence the sheep are healthy, and the small cost of handling them is an important item on the credit side of the account. Disease is practically unknown. There are exceptional complains of catarrh, tapeworm, and an occasional case of poisoning. None of these affections are general. The only disease which may be said to be common is scab, but this is well under control, and in some counties it has been so nearly eradicated that inspectors are not needed. The stringent scab laws afford ample protection to the flockmasters. Even in infected flocks very little loss occurs, as they are cured by dipping.

Generally speaking, the sheep industry of Wyoming is flourishing, although there is something of a decline in the southeastern part of the State, owing to the fencing of the range. In localities where the business is unfettered it is looking up, and the sheepmen feel encouraged. They are making more money than any other class of stockmen; however, not many new men are engaging in the business, being deterred by the fear of further tariff agitation. The best ranches are already occupied by men who do not care to sell. In Johnson and Fremont counties bright prospects are reported for an increased number of sheep.

As to the best methods of conducting the business, L. C. Morrison, of Fremont County, says:

Take a herd of 2,500 to 4,000. The herder is always with the herd; another goes with the team once a week or so to move camp, look up lost sheep, look for new range, camp ground, etc. The herd is kept along the streams or in the mountains during the summer. In November or December, when the snow begins to fall, it is taken out into the waterless plains, where the range has been unused in summer, depending entirely upon snow for water, where it remains until the snow is gone. About the time lambing begins—about the 10th of May—when the breeding ewes are put in a separate herd. Two or three extra hands are required through lambing time. A few shear in April, before lambing, though many shear in July, after lambing. I prefer to shear in April. I have been in this country eight years. In that time we have had but one very severe winter. The condition of the range being favorable but few sheep died; but if such a winter should come now the loss would be very heavy. We always are in fear of hard winters. Hay is out of the question.

In the unsettled portions of the State the nomadic range system is considered most profitable, especially from lambing time until regular winter sets in, when hay can be had and sheds provided during stormy weather. No uniform system of conducting the industry can be recommended, because portions of the State are as unlike as Vermont and Texas, and methods in vogue in Fremont County would bankrupt a flockmaster on the Laramie Plains; however, by following the plans adopted by experienced sheepmen and attending strictly to business, by vigilance and employing competent and trustworthy herders and hands, success and profit are certain.

In northern Wyoming, in Sheridan County, the method of E. B. Viall, of Beskin, is to be commended, and is as follows:

In the first place get good sheep to begin with. Keep them tame. Keep your pens clean in winter. Keep them dry. Run them out on the range every day. I run my sheep in the mountains from July 1 until the snow drives them out. They do splendidly. There is plenty of shade, feed, and water. There is no other animal that does well in the mountains. The greatest trouble in this part of the country is to get a good winter range where you can get hay. The trouble is scarcity of water to irrigate with. There is no trouble about the range as long as there is no snow; but to be safe in the business you must furnish hay. Last winter I fed considerable hay. Perhaps this winter, if it is a hard one, it will take 100 tons to winter my 9,000 or 10,000 head. No one should go into the business unless he can furnish plenty of good hay. I am now 57 years old, and have had more or less experience with sheep my whole life, and I have come to the conclusion that the way to make a success of sheep husbandry is to raise the best, keep everything strictly clean, and do everything in season.

CHARACTER OF GRAZING LANDS.

In order to form a correct idea of the country it is necessary to briefly describe the physical features of the State, which are mountainous, with valleys, bold bluffs, foothills, and broad rolling plains. The mountains have a general direction from the northwest to the southeast, and often present the appearance of broken and detached spurs. Narrow valleys

and wide, open plains lie between mountains capped with everlasting snows and seamed with deep canyons and gorges. The chief ranges are the Yellowstone and Wind River of the Rocky Mountains in the northwest, the Big Horn Mountains near the center and north, and the Laramie and Medicine Bow or Black Hills ranges in the east. Numerous rivers and their tributaries have their head waters within the State of Wyoming.

The extent of surface of the State is 355 miles in length by 276 miles in width, giving an area of 97,883 square miles; and notwithstanding the mountainous character of the State, more than one-half of the area is considered good grazing land, available for that purpose as free public land. The State as a whole has an elevation of from 3,000 to 8,000 feet above the sea level.

The Laramie Plains, in southeast Wyoming, are the best known open range, with an elevation of 5,000 to 6,000 feet. There are no great extremes of altitude except in the Big Horn range in the northwest, and Laramie Peak in the southeast. A very large portion of the State consists of small undulating plains and valleys running back into the hills or breaks, which constitute the favored shelter and grazing grounds during stormy winter weather.

The valleys and even the desert lands, when irrigated, produce large crops of grain or alfalfa. The soil of the valleys and plains is mostly of a rich loam, although there are various qualities of soil which produce nutritious grasses that cure where they grow and furnish food both summer and winter. The grasses in the foothills and breaks are sparse, but when cured are the most nutritious of forage plants. In addition to the grass, there is other nutritious herbage suitable for browsing and grazing. The mountains are mostly covered with a timber growth of pine, spruce, hemlock, and cedar; in some of the foothills aspen, walnut, elm, ash, box elder, hackberry, and small growth of red cedar; while along the rivers or principal streams may be found two species of cottonwood and thickets of willows.

Governor Warren states that during the past ten years not more than fifteen days each year has it been necessary to feed hay or grain to strong, healthy sheep, and then only on account of deep snows which prevented them from reaching the ground. The grass is accessible and nutritious throughout the year.

NUMBER AND VALUE OF SHEEP IN WYOMING.

Regarding the value of sheep in Wyoming, it is interesting to note their high average as compared with that of many other States and Territories. According to the Statistician of the U. S. Department of Agriculture, in his estimate made in June, 1889, the average value of the sheep at that time for the United States was $2.21 per head, while Wyoming sheep were placed at $2.23 a head, and the only other States and Territories west of the Mississippi River which had a higher aver-

age were Dakota, Idaho, Iowa, Minnesota, and Montana, and the excess was but a few cents. The estimate made then represented fairly the cash value of the sheep. But at the present writing (February, 1891), fully 30 per cent should be added to the average value. Favorable tariff legislation and increased demand for breeding stock have enhanced their value to that extent.

The total number of sheep in Wyoming for 1891 is about the same as in 1889. The governor of the State estimated the number then at 1,250,000, while the auditor, in his annual report, only puts the number at 459,991 on which taxes were paid; but as certain aged sheep are exempt from assessment and many owners feel that they should make another exemption to cover the number which may be lost by wild animals, from exposure, or from thieves, the auditor's report is not unreasonable; it is not expected to be accurate. Both of these local estimates are extremes, one a maximum estimate and the other a minimum. The last report of the United States Department of Agriculture estimates the number at 1,017,373. This estimate is conservative and is approximately correct. From careful personal investigations the actual number of sheep in Wyoming on January 1, 1891, may be placed in round numbers at 1,000,000 head. The failure to show an increase over January, 1889, during the two years that have elapsed, is not owing to any decline of the industry, but is caused by the large sales of sheep to feeders, together with heavy losses in western and central Wyoming during the winter of 1889-'90, which was the severest winter ever encountered by sheepmen in that region.

Values of the animals vary as to class, as described in detail in the preceding pages. An average value of $3 per head would give a total value of $3,000,000, exclusive of the wool clip. The shipments of wool this year from Rawlins, in Carbon County, exceeded 1,500,000 pounds. A conservative estimate of the value of the wool clip for 1890 is $1,000,000.

THE WATER SUPPLY.

The entire water surface area of Wyoming is 315 square miles, and consists of the various mountain streams and lakes, with the rivers and their tributaries. The principal rivers are the North Fork of the Platte and its feeders, which drain nearly one-third of the State, the central and southeastern portion. The southwestern portion of the State is drained by the Green River and its tributaries. In the northwestern portion of the State are the affluents of the Lewis and Snake rivers. And the north and northeastern portions of the State are drained by the tributaries of the Yellowstone, the Big Horn, Powder, Little Missouri, and Cheyenne rivers. The State is one of the best watered in the mountain country with these and hundreds of mountain streams. During winter the sheep that are not located near these streams depend upon the snow for water.

The average annual rainfall in the arid region is placed at 15 inches. The cold mountains condense the moisture in the country adjacent, thereby robbing the plains of their quota, making it fit only for grazing, unless reclaimed by irrigation, which would make of it a productive agricultural country.

Numerous rivers, including the Missouri, Columbia, and Colorado, with their respective tributaries, have their head waters within the State. Among the largest rivers are the North Platte, which flows for a distance of several hundred miles through central and southwestern Wyoming, the Green in the southwest, the Snake and Yellowstone in the northwest, and the Big Horn and Powder rivers in the northeast.

TEMPERATURE AND CLIMATE.

The climate of Wyoming is healthful, mild, equable, and salubrious; cool in summer and averaging warm in winter, with but few snowstorms, and the stormy winds which usually accompany a fall of snow prevent the complete covering of the ground. Winter grazing for live stock can therefore be depended upon, and is a conspicuous feature of Wyoming. The remarkable wintering of live stock is owing to the peculiar climatic conditions and influences. These are almost the opposite, in most respects, to those of the low-lying countries of the same latitude farther east, where the soil is wet, the atmosphere heavy with moisture, and the growth of vegetation rapid, coarse, and rank. During the winters in Wyoming there are more clear, sunshiny days, with fewer storms and less snowfall, than in the country eastward. Besides, the mountain streams remain open during the entire winter, so that the stock is not deprived of drink. The clearness and dryness of the atmosphere at all seasons of the year make the air pure and bracing, a favorable condition for sheep-raising and successful breeding. This important climatic advantage is favorable to the health of live stock generally.

Another significant advantage of the winter weather is the small precipitation of rainfall or snow which takes place during the winter, and aids in explaining, to those unfamiliar with Wyoming, how it is possible for live stock to subsist on the open ranges without other food supply than the native grasses. Besides, the animals are not subjected to the chilling effects of rain and snow storms of the lower and more humid regions. The weather is cold, but easily withstood, because of the dryness of the atmosphere. On the mountains opposite conditions prevail. There the heaviest precipitation occurs during the winter months in the form of snow. A record of the temperature has been kept at Cheyenne. For ten years the mean temperature was 59 degrees, the highest temperature about 90 degrees above, and the lowest 19 degrees below zero. The air may be said to be absolutely pure and the climate very salubrious, conditions exceedingly favorable for stock-raising.

THE RELATION OF IRRIGATION TO THE SHEEP INDUSTRY.

In view of the growing importance of the sheep industry in Wyoming, the question of winter feeding is one of great importance, and must command the thoughtful consideration of every flockmaster. As the population increases and flocks become more numerous throughout the State, it is only a question of a short time when the present winter methods of handling sheep must be abandoned. The prudent husbandman must be prepared to adopt what may be trenchantly described as more civilized methods, assigning to the past the customs of its pioneers.

The settling up of the country under irrigation need not necessarily drive out the sheepmen, as feared, but instead it may insure the permanency and enhance the profits of the business. In some portions of the State sheepmen are now compelled to feed more or less hay or grain, or both, during midwinter, and also provide shelter. Although this is very expensive, yet they find it profitable, obviating risk of heavy losses from exposure and shortness of feed. Most of the hay and all of the grain are now shipped in, making them very expensive for feed, but when irrigation becomes more general the State will produce its own supply of feed. That time is coming. There are 40,000,000 acres of arable and grazing land in the State, one-eighth of which can be irrigated. Wyoming should furnish within herself the best markets obtainable for all kinds of agricultural products.

Under a successful system of irrigation, stock-raising and farming combined will be both practical and profitable. Crops produced by irrigation yield a larger quantity and better quality per acre than when produced otherwise. The system of letting the stock business "run itself" in the very nature of things must end sooner or later in every portion of the State. In certain localities it has already stopped, and as a result definite calculations can be made as to certain profits in the business. The land suitable for irrigation has remarkable adaptation for the construction of irrigation works, and abundant water is accessible. There is no question as to the necessity and importance of irrigation for stock-raising. It will supplement the pasture and the plains, and enhance the value and usefulness of both. Irrigation has been sufficiently tested to demonstrate that by its aid all kinds of small grain and grass do well. Alfalfa will produce two crops a year, an average of about 2 tons per acre at each cutting. The average precipitation for the whole of the mountain watersheds is placed at 30 inches. The irrigable land is located in the valleys, which are narrow. The uplands bordering these valleys are suitable only for grazing, and can not be successfully irrigated; hence the stock-raiser will have his winter food produced conveniently near his range. Irrigation will trench upon only a fraction of the existing grazing lands.

I am convinced that irrigation will ultimately become an adjunct,

which will insure the perpetuity of the sheep industry of Wyoming. The pasture land possesses great value, and when irrigated for hay land it has a value equal to, if not greater than, any corn crop in other sections of the country. The hay produced in the mountain regions is of superior quality and fineness, and of greater value per ton than that produced in the East. It is like the native grasses, having a fine fiber and is very nutritious.

PERSONAL EXPERIENCE AND COMMENTS.

The following extracts from correspondence or interviews with representative sheepmen are given here because of their pertinent relation to the industry of Wyoming. The pointers are especially valuable, because they represent the observation or experience of men practically engaged in the sheep husbandry for some time.

W. D. Currier, Albany County:

Here on the Laramie plains the sheep business is about wiped out. Six years ago there were forty sheep ranches, now there are six. Cause, no range. Parties bought the railroad land in large blocks, and then fenced in both railroad and Government land and allow no one to go inside the fence. There are blocks of 50,000 and 100,000 acres so fenced here. I used to run 20,000 sheep here—now run 6,000 or 8,000, and shall have to move out next year, as they are now fencing the last of my ranges. It is a dog-in-the-manger business, as there is not one-fourth the cattle or sheep on the Laramie plains there were six years ago.

T. J. Gorman, Uinta County:

Last year losses were 50 per cent among sheep, depending on range. Sheep are run on Government land entirely; no leased land here. My experience is, with sheep shearing 7 to 8 pounds and wool worth 16 to 18 cents here and good mutton $3. Hay for three months each winter, makes it a safe and profitable business, otherwise it is unsafe and unprofitable.

A. Pomeroy, Uinta County:

Our usual way of conducting our shearing is by having a corral made on or near our lambing ground—on good ground; then we hire men who usually travel and do nothing else but shear sheep. We pay about 10 cents per head for the shearing. The problem then is the disposing of our wool. We always try to sell at home, for when we ship to commission men we invariably get swindled, and so rather than ship we would make a sacrifice.

B. Sweeney, Sweetwater County:

This country will not carry much stock, not as much as many men suppose, and the hard winters with an overstock will spoil the business. There is only one way for profitably conducting sheep husbandry that I know of here; that is, keep the sheep as fat as possible in the summer on good range, and let them take their chance, with good care, in the winter. Feeding is impossible here. There are some men here who have as high as 35,000 sheep; the flock is divided into bands of about 2,000 each. It will not pay to run less than 2,000. Last winter pretty nearly broke a good many sheepmen in this country, but it was an exception. Ten per cent would cover the losses for some time before, say four years. If it was not for the hard winters and wild animals the sheep business would pay yet.

D. L. Swinney, Fremont County:

I think the sheep industry would be a fair paying business if we could get a fair protection in the custom-house and could get the railroads to carry our wool and mutton to market at a more reasonable rate than we have to pay now. I think the sheep industry will be the main live-stock industry in the State in the course of time.

John McCrady, Sweetwater County:

I drove the first stock sheep that ever came into this county, in 1878, from Colorado. Have followed the business mostly ever since. Have also driven from Texas here and one drive from California; sometimes with a profit, but not always. The only way sheep can be run in this country at a profit is on a basis of 5,000 head or more. It does not pay to run less, for the reason that it requires the same amount of labor to run a small bunch of 500 head as 2,500. The more sheep you have the less your expense per head of running them will be. We keep them on the move all the time, never over five days in one camp; have movable camps, and never corral unless to shear and doctor them, or separate them in some way.

J. S. Woodruff, Fremont County:

Sheep are handled here in flocks of from 1,800 to 4,000; 2 men with each band. They have a team and wagon, tent and supplies, and go with the flock all the time; move every few days. The sheep and horses live exclusively on the range the year through. It requires about 5 acres to each sheep. The grass and sage are very nutritious, but small and thinly scattered, such as will grow on dry and barren soil with no rain. An Eastern farmer could not comprehend or catch on to our way of stock-raising only to see it. The profits are large, and the chances simply desperate. If snow comes, or a hard winter, we are helpless.

D. V. Bayne, Johnson County:

It is very difficult to make a specific statement with regard to increase of sheep, because you may unknowingly trust too much to an inexperienced or careless shepherd in lambing season, or you may encounter a bad storm at this critical time. It is difficult to make specific statements as to destruction by wild animals, because so much depends upon the guardianship of the herd. Destruction by exposure ranges from 1 per cent to 75 per cent, as feed, care, and storms vary. In my opinion sheep can be made a success here only in bands of more than 1,000, because you must protect them from wild animals, whether in the wilderness among the pines or in 10 paces from your cottage door. Some men in Wyoming have done well upon the range system exclusively, but many times sheep fare better eating hay than digging in 2 feet of snow for food. At present, grades are preferable to thoroughbreds, because they are better rustlers and better mothers. With Wyoming's range facilities and healthy climate the development of her agricultural lands would make her an excellent sheep country.

Dr. Gilligan, Green River, Sweetwater County:

The local markets of the towns of this county are very good, utilizing a large number of muttons which dress an average weight of 68 pounds, or 112 pounds gross. The surplus muttons from this country go to Kansas City or Denver and Chicago. Cattle are scarce now in this country. They have been replaced by horses, mules, and sheep, for which this country is especially adapted.

W. W. Gleason, manager Warren Live Stock Company, Cheyenne:

We now have 110,000 sheep and 2,500 Angora goats. Our crop of lambs for 1890 was 25,000, and our Angora kids number 700. We turn off every year as feeders or mutton sheep our four-year-old wethers, five-year-old ewes, and such lambs as are

unsuited by condition to run through the winter. These classes, together with the culls of different ages, are disposed of for muttons. As an experiment we will hold over one band of four-year-old wethers and turn them off at five years old to feed for muttons. We have our winter feeding stations in Nebraska. Our wool is promptly consigned to Dewey, Gould & Co., of Boston, as soon as shorn. Our wool clips for 1889 amounted to 302,745 pounds. In preparing this for shipment we baled the wool instead of sacking, and saved $1,422.81 by that method. The freight rate from Cheyenne to Boston on sacked wool is $2.47 and for baled wool $1.80 per 100 pounds.

Robert C. Morris, Cheyenne, Wyo.:

The suitableness of climatic peculiarities, with indigenous grasses and nutritious herbage, to profitable sheep husbandry in Carbon County appears to have been recognized in a practical way much later than its adaptability to cattle-growing. Ten years ago, before the division, the 22,080 square miles contained only 1,540 sheep, grazing in small flocks over the vast pasturage. The last five years have greatly increased this industry. At this time there is, within but little more than half the same area, hardly less than 200,000. An estimate based on reliable information shows the assessment enumeration to be much too low. This great increase holds no inconspicuous place among the causes of decline in the cattle business. While the latter has been prosecuted with actual loss and dubious prospects for three or four years past, but now brightening considerably, the former has yielded encouraging returns, besides adding to capital by augmentations of numbers in rapid natural increase, notwithstanding large shipments to eastern markets. The immense flocks on the ranges must compel cattlemen to smaller holdings and more judicious care within fenced ranges for the future. And there is certain reason to fear that the sheep enterprise may be overdone. The last wool clip of the county is estimated at about 1,500,000 pounds. The sheep and their fleece are of excellent quality, largely infused with Merino and other choice blood, producing superior grades for all purposes, singularly exempt from the contagious distempers common elsewhere among these animals, especially in New England and the East. Everywhere the animals are healthy, in splendid flesh, and promise an unexampled increase in the coming season.

LAWS AFFECTING THE SHEEP INDUSTRY.

As the animal industry of Wyoming constitutes the chief business of her people, it has been necessary for the best interests of all concerned to have special laws relating to the live stock of the State. The following extracts from the statutes at large relating directly to the sheep industry are included as a necessary complement to this report:

SEC. 4144. The county commissioners shall appoint a sheep inspector who shall be a citizen of the county for which he is appointed, for each county containing two thousand (2,000) sheep, who shall hold his office for two years, unless sooner removed; and any inspector may act in an adjoining county having no inspector on request of the county commissioners thereof.

SEC. 4145. It shall be the duty of the sheep inspector, whenever he has knowledge or information that any sheep within his jurisdiction have the scab or any other malignant contagious disease, to inspect said flock and report in writing the result of his inspection to the county clerk of said county, to be filed by him for reference for the county commissioners or any party concerned, and, if so desired, once in every two weeks thereafter to reinspect said flock, and report in writing the result and treatment, if any, in the same manner until said disease is reported cured: *Provided*, That in case of removal of the flock 6 miles from the range of any other sheep, as hereinbefore provided, he shall only make one inspection every three months.

SEC. 4146. Upon arrival of any flock of sheep within this Territory from any other county, State, or Territory, the owner or agent in charge shall immediately report them to the inspector of the county entered for inspection, and the inspector shall then inspect them and report as provided in previous section, and in case of failure from any cause of the owners or agents to report for inspection, a fine of not less than one hundred dollars shall be imposed on said owner or agent for said offense, by any court of competent jurisdiction, which fine, when collected, shall be paid into the general fund of the county treasury, and any judgment for such fine shall be a lien on such sheep; said fine to be collected by suit brought in the name of the State.

SEC. 4147. The owner or agent of any flock reported by the inspector to be so diseased shall immediately herd them so they can not range upon or within one mile of any grounds accustomed to be ranged upon by any other sheep, and shall restrain them from passing over or traveling upon or within one mile of any public highway or road; and in case this can not be done he shall immediately remove said sheep to a locality, when they shall not be permitted to range within less than six miles of any other flock of sheep, and said sheep shall continue to be herded under the above restrictions until upon inspection they shall be reported to be free from disease.

SEC. 4148. The owner or agent or employés of any flock of sheep requiring inspection or about to be inspected shall afford the inspector all reasonable facilities for making his inspection; and for any violation of any of the provisions of this chapter, said owner or his agent or employés shall be fined not less than ten dollars nor more than three hundred dollars, and every separate day's offense shall constitute a separate offense, and the written report of any offense, made by an inspector under oath, shall be *prima facie* evidence of the commission of said offense, and any justice of the peace of the county in which offense is committed shall have jurisdiction thereof, and the inspector shall *ex-officio* report all violations of the provisions of this chapter of which he has knowledge.

SEC. 4149. Every inspector, before entering upon the duties of his office, shall take the oath of office prescribed by law and shall give bond to the State of Wyoming in the sum of one thousand dollars with good sureties, conditioned that he will faithfully perform the duties of his office; such bond shall be approved by the county clerk, who shall indorse upon every bond he shall approve as follows: "I am acquainted with the sureties herein, and believe them to be worth the amount of the penal sum of the within bond, over and above their just debts and liabilities."

SEC. 4150. Such bond, with the oath indorsed thereon shall be recorded in the office of the register of deeds for the county in which the inspector shall reside, and may be sued on by any person injured on account of the unfaithful performance of said inspector's duties: *Provided*, That no suit shall be so instituted after more than twelve months have elapsed from the time the cause of action accrued.

SEC. 4151. Every inspector shall keep a fair and correct record of all his official acts, and, if required, give a certified copy of any record, upon payment of the fees thereof, and in case of the inspector's death, resignation, or removal said record shall be deposited with the register of deeds.

SEC. 4152. The inspector shall receive for his services five dollars per day whilst necessarily employed in inspecting, and for the first inspection an additional fee of one cent per sheep when the flock inspected is five hundred head or less, and for inspection of large flocks five dollars for the first five hundred, one-half cent per head for the second five hundred, and one-quarter of one cent per head for the remainder of the flock, to be paid by the owner or his agent, and ten cents per line of ten words for any official report or document: *Provided*, If any person shall keep several separate flocks of sheep, and some flock or flocks be not infected with scab, the owner shall be required to pay only the fees for inspection of infected flock or flocks: *And provided further*, That when an inspection is made and the result shall show no disease, the inspector shall give the owner a written statement to that effect, and shall be paid for such inspection out of the county treasury at the rate established by this

section, as before named, after his account for said inspection shall have been allowed by the county commissioners in the same manner and form as claims against the county are allowed and approved by them. The inspector shall receive ten per cent of all fines and penalties collected in cases in which he gives information of the offense, and his interest in the result shall not affect his competency as a witness; and all fines and penalties as herein provided shall be paid into the general fund of the county.

SEC. 4153. It shall be the duty of the inspector between the tenth day of August and the tenth day of December in each year to visit each flock of sheep within his county and make a written report of their condition as to scab or other malignant contagious diseases, and when he reports no disease he shall be paid by the county as provided in the last preceding section.

SEC. 4154. No sheep inspectors shall be appointed by the county commissioners of any counties of this Territory until they have been petitioned to make such appointment by the majority of the sheep-owners of said counties respectively.

SEC. 4155. The inspector shall be allowed to appoint deputy inspectors when his duties are such as to require his presence in distant portions of the county at the same time. Such appointment shall be approved by the chairman of the board of county commissioners, and when so appointed and approved the official acts of such deputies, as such, shall have full force, and the inspector and his bondsman shall be held responsible therefor.

SEC. 4156. Whenever a sheep inspector shall wilfully and falsely report any sheep subject to disease, he shall be subjected to a fine of ten times the amount of fees charged by him for inspecting, and if he shall wilfully and falsely report any sheep inspected by him free from disease that are thus infected, he shall be subjected to a penalty not exceeding three hundred dollars for each offense.

Section 4157 provides for his removal by the commissioners if found guilty of either of the offenses set forth in section 4156.

SEC. 4158. Every owner of sheep having scab or other malignant diseases shall have the right to drive over the intermediate ranges to his own dipping works, or to any public or private dipping works, but in so doing he shall consult the owners or occupants of said ranges twenty-four hours before reaching the nearest limits of the same as to where he shall cross the same, and in no case shall he enter another's corral or water at his troughs or accustomed watering places with his diseased sheep without the written or otherwise express consent of the owner, and he shall take every possible precaution to avoid mixing his diseased sheep with any other flock or flocks. For each and every violation of these provisions of this section he shall be subjected to a penalty of not less than two hundred dollars nor more than five hundred dollars, and shall be held liable for damages in case any other flock of sheep contract disease through his carelessness or failure to comply with this law.

SEC. 4159. Every person driving a flock of sheep from one range to another, or through any portion of this State, shall use every precaution to avoid mixing his sheep with those belonging on the range through which he may be driving, or with sheep being driven by other persons, and a wilful or careless neglect of the provisions of this section shall subject the party so offending to civil suit for damages by the person with whose sheep his sheep may become mixed, and to a fine of not less than one hundred dollars, nor more than five hundred dollars: *Provided*, That this section be not so construed as to prevent the proper herding of sheep on their accustomed ranges.

SEC. 4234. The county commissioners of the various counties in this Territory are hereby authorized and required to encourage the destruction of wolves, wildcats, lynx, bear, and mountain lion, by making payment out of the county fund to any persons who shall engage in the destruction of the several animals hereinbefore named, the sum of money as herein designated, as a bounty for the destruction of said animals, viz: For each wolf or coyote, one dollar and fifty cents; for each

wildcat, twenty-five cents; for each lynx, twenty-five cents; for each bear, five dollars; for each mountain lion, five dollars. The person or persons so engaged, who may desire the compensation above named, shall present to the clerk of the county in which the animals were killed the entire skin or pelt of such animals, together with all the paws attached, accompanied by an affidavit stating that the animal from which such skin or pelt was taken was killed in this Territory and in the county where the claim is made by the persons so presenting, and that the said animal was not killed before March 3, 1884. It shall thereupon be the duty of the county clerk to give the person or persons who shall produce the evidence hereinbefore required a certificate stating the number of animals of each kind killed, and to what sum the person or persons are entitled under this section, which certificate may be filed with the clerk of the board of county commissioners as a claim against said county, to be by him presented to the board of county commissioners at their next meeting thereafter, at which time the board of county commissioners may order a warrant drawn upon the county treasurer, as in other cases. It shall be the duty of the county clerk to cause any person presenting the skin or pelt to attach all the four paws and punch a hole in each ear one-fourth of an inch in diameter, in the presence of said clerk at the time of the presentation of the skin or pelt of every animal hereinbefore specified, and at once to destroy the same. (S. L., 1848, ch. 100, sec. 1.)

COLORADO.

Colorado, the Centennial State, was made up of some parts of the original States and Territories of Kansas, Nebraska, and New Mexico. It has an east and west length of 380 miles, and is 280 miles from north to south, forming an almost perfect parallelogram. There are fifty-five counties. They are very large, and comprise an area of 104,500 square miles, or 66,880,000 acres.

There may be said to be three natural divisions of the State—the mountain ranges, occupying the central portion from north to south; the foothills, and the plains. The mountains consist of three generally parallel ranges, with intervening plateaus or vast valleys, known as "parks," which are distinguishing physical features of the State. These parks are numerous, but there are four of chief importance—South Park, with an area of 12,000 square miles; San Luis Park, somewhat larger; then Middle Park; and, lastly, North Park. All these parks are walled in by high mountains, are well timbered, and exceedingly fertile.

The plains occupy one-third of the area of eastern Colorado, and extend from the eastern mountain range by a gentle fall down into the fertile plains of Kansas. The western part of the Colorado plains becomes steeper and rougher until the foothills appear. These arid plains and eastward mountain slopes have an elevation of from 5,000 to 8,000 feet, and nearly one-half of the State lies on the eastward slope of the Rocky Mountains.

The animal industry of Colorado is mainly confined to the plains, although a considerable number of live stock are raised in the mountain parks and the many forks and valleys of the mountain ranges. The mountain ranges of Colorado, owing to their abrupt and precip-

itous character and lofty peaks, afford but a small area of summer pasture as compared to the mountain ranges of either New Mexico or Wyoming; and sheep are about the only class of live stock for which the mountain pasturage is at all available. Picturesque mountains, however, make very poor sheep pasture.

The soil of the plains contains every element of fertility for the production of grasses adapted to this latitude, and thus nature provides range pasture suitable for live stock most of the year. The plains are not suited to general agriculture, because, as the records show, in thirty years the average annual rainfall has been less than 15 inches, and this, while not sufficient for producing crops, answers all practical purposes in most seasons for sustaining the growth of the native grasses. The various grades of soil represented are of the gravelly, sandy, clayey loam, calcareous, peaty, and adobe. The soils are generally excellent in quality, and with sufficient moisture produce abundance of grass, and when irrigated will produce grain. The adobe soil is black, heavy, and sticky, and is usually found along the bottoms near the streams. The area of this class of soil is small. Generally the soil of most of the open range in eastern Colorado is a hard, sandy loam and impregnated with alkali.

The live-stock business constitutes the chief agricultural occupation of Colorado, and is as well one of the leading industries of the State. The different branches of the animal industry rank in numbers and value in the order named—cattle, sheep, horses, and swine. Since the decline of the cattle business in the State the sheep industry has been steadily advancing, and the same is true of the horse business. There seems to be no doubt that the sheep and horse industries will become the principal live-stock interests of the State. There is no class of stock more naturally adapted to Colorado than sheep, and at the present time they are the most profitable branch of the animal industry. The prices for the wool product for several years past have not been remunerative, but, taken in connection with the high prices for mutton during the same period, fair profits have been realized. The demand for mutton has enabled the sheepmen to find ready sale for all surplus wethers and at the same time rid the flocks of culls and aged sheep, and otherwise improve the breeding flocks. Since 1888 mutton has been a better source of revenue and profit than the wool product; and this has led to some marked changes in the method of breeding and handling sheep. Prior to the decline in the cattle business sheepmen generally bred their sheep with reference to increasing the weight of fleece without regard to mutton qualities of the animal. But now, owing to the insufficient supply for even the home demand, to say nothing of outside demand from feeders, which is growing greater every year, and in consequence of which the value of every sheep has been enhanced, a change in the system of sheep-breeding has been adopted, which will increase the weight of carcass without reducing the weight or value of the fleece.

In order to secure the desired result as speedily as possible many of the sheepmen have invested in Downs or other mutton rams to cross with the ewes, which have been bred so many years with a view to increase the weight of wool. And from this cross an animal is produced that generally meets the present requirements both as to wool and mutton. Though this experiment is fairly satisfactory, yet this system of breeding has only begun. The lambs are strong, vigorous, and hungry from the start, and there is not so much difficulty in getting them to suckle as with the Merinos. They seem to thrive on any kind of range; the Down cross, however, requires considerable more feed than the Merino or Mexican. Another favorite cross is the French-Spanish cross-bred Merinos. Probably the most notable and extensive experiment of this class in the State has been conducted by the Merino Stock Farm Company of Elizabeth, Elbert County. The flock of this company was established by Frank G. Willard in 1872, and consists of pure-bred Merinos. The class of rams that has been used in the past were thoroughbreds from Vermont. The present company now makes a specialty of the French-Merino ram, and thereby get greater size of frame and carcass, better rustlers, and do not sacrifice the quantity or quality of wool. The result of this cross on this particular flock produces a sheep which, when mature, will weigh from 100 to 140 pounds gross, and shear from 12 to 15 pounds of fine wool of good length of staple. This one flock is a grand object lesson for the industry, and demonstrates its possibilities in Colorado.

The sheep now in the State of Colorado are mostly Merinos and their grades. A large proportion of the sheep in southern Colorado trace back to the Mexican base, and though this strain of blood is not esteemed highly by practical sheep-raisers, there is no reason for concealing the merits of the Mexican sheep, their adaptability to the climate, the range, and to the pioneer methods of conducting the business. It required but very little capital to get a start with sheep of this class, and by using pure-bred Merino rams the flocks were soon graded up. It is a well-known fact that the Mexican ewe, the base of many of the early sheep of Colorado, was a hardy animal, an excellent traveler of great endurance, and as a mother even excelled the best improved sheep; and these good qualities she transmitted to her progeny. The average Mexican ewe has a small body and long legs, with small wool surface. There is little or no wool on the legs or bellies, and the fleece is a sort of hairy wool of little value, but the Merino cross soon obliterates the objectionable qualities. The good qualities of the Mexican ewe were conveyed to the progeny of this cross in a marked degree, making a very happy combination, which has helped the sheep industry to attain its present success, and has added generally to the importance of the animal industry of the mountain regions and arid plains.

In connection with the preceding paragraph it must be remembered that only a portion, and not all, the flocks are of the Mexican Merino

sheep, because most of the American flockmasters started with good grade Merinos which they brought from either California or from the States east. Prior to 1888 the Merino ram was used almost exclusively; now small but increasing numbers of Shropshire, Southdown, Cotswold, and French Merino rams are being used.

The sheep are run in flocks of from 1,500 to 2,000 head. The average number owned by one person or firm usually consists of from one to three flocks of that size. There are some large holdings throughout the State that number as many as ten, twenty, to fifty thousand sheep, but these are the exception and not the rule. Under existing conditions the disposition of sheepmen is to run smaller and better flocks and handle them better than heretofore.

The sheep are held on the open range during the summer and frequently most of the year. They subsist wholly on the native grasses, which consist mostly of the gramma, buffalo or blue stem, and the bunch grasses. There are several other varieties of less value. These ranges are devoid of shade or shelter in most places. Water is supplied from occasional creeks, springs, natural water-holes, or wells, and in some cases when the range is controlled by the flockmaster reservoirs are constructed at convenient places. In winter the sheep are brought to the home ranch, where, in some cases, feed is provided when the adjacent range is insufficent to sustain them, or bad storms prevent grazing. The home ranch is generally located on some creek where there is good shelter and water convenient, also considerable browsing, besides abundance of grass.

The loss from depredations of wild animals is not so heavy as in Wyoming or Texas, except in mountain "parks." The State bounty for scalps of wild animals, though it is small, has no doubt been helpful to the sheepmen and saved many times its cost of taxable property to the State, besides causing a large destruction of animals that ravage the flocks. The loss of sheep from this source varies, as the reports of the sheepmen range from 1 to 5 per cent, with an average of less than 2 per cent. The loss of sheep from exposure is much greater, ranging from 3 to 15 per cent, an average of about 5 per cent, or double that of the loss from wild animal depredations. These sources of loss grow less each year as the methods of handling sheep improve.

Outside of breeding stock very few flocks of sheep are brought into Colorado from other, especially eastern, States. Occasionally flocks are driven into the State from Oregon, California, Utah, or New Mexico, but more sheep are exported than are brought in. A few years ago a great many flocks were brought in from the States east and seemed to acclimate readily, with no ill effects to either constitution or fleece. Frequently those brought from the lower and more humid country needed the first year to become thoroughly acclimated or habituated to the systems in vogue for handling sheep on the plains. Their wool fiber becomes dryer or harsher, and in some cases appears to become

coarse, but there is no serious deterioration. Many sheepmen claim that the cold and dry winters improve the staple.

Regarding breeding rams there exists some prejudice against the highly bred, well fed, and carefully housed ones raised in the east. They lack the necessary quality of constitution, and do not thrive as well as the native-grown rams. The western flockmaster is partial to home-raised rams, high grade or full-blood, from two years old and upward, to use on his ewes. From thirty to fifty ewes are bred to Spanish or French Merino rams, and from fifty to seventy-five to Shropshire or Cotswold. The ewes are bred during the months of December or January; the rams remaining with them about thirty days.

The average per cent of lambs raised depends on the management of the flock, varying according to the vigilance and skill of the attendants during the lambing season. The minimum number of lambs is about 75 per cent, and the maximum number raised is about 90 per cent. Notwithstanding the short breeding season not more than 10 per cent of the ewes fail to breed.

Sheltering and winter feeding are not regular accessories of Colorado sheepmen, except when necessity demands them during severe weather. In the southern part of the State little or no provision is made for shelter or feed in the winter, while in the northern and eastern part cheap board sheds are provided, generally open to the south or east. A great many, however, use the sod or board corral, with some sheds made of poles, brush, and hay. Still others depend on the natural shelter of the rough, broken country, with deep, rocky cañons, or the native cedar groves.

The lands on which the sheep graze is usually Government or railroad lands. The Government lands are free, while the railroad and school lands have to be leased at an annual rental of 5 cents per acre or $32 per section. Some of the more valuable land costs still more. Nearly every sheepman owns some land which has water on it, also the home improvements, such as corrals, sheep sheds, and other conveniences necessary to the business. So the sheepmen, it can be said, both own and rent land—that is, they own the water privileges and graze the sheep on Government or leased land. The sheepmen feel that they could not afford to pay Government price in order to own sufficient range, because it requires so many acres for each animal.

The principal object of sheep-raisers has heretofore been the production of wool, and that of mutton was merely incidental, but under present conditions it may safely be said that both wool and mutton are of almost equal importance to sheep-raisers. Mutton has been more profitable since 1888 than wool. The class of sheep that is desired by the practical flockmaster of Colorado to-day are sheep of good constitution and heavy fleece, of good length of staple, of clean wool, and at the same time large-bodied animals. About such an animal as would be secured by the cross of the Shropshire buck on a high grade Merino ewe is preferred.

The shearing season in Colorado usually takes place during June or July. The preliminary preparations for this work are very simple. A few loose planks are placed on the ground either in the sheds or in the corral, and enough sheep are brought in from the range for a day's work for the gang of shearers. These are generally Mexicans, especially in southern Colorado, or expert California shearers, who command higher wages, as they are more rapid and skillful. The shearers receive from 4 to 6 cents per fleece tied up. The wool is immediately sacked and disposed of as soon as possible. The local buyer generally gets the clip if his prices are at all satisfactory, otherwise it is consigned to Eastern commission merchants in St. Louis, Chicago, Philadelphia, or Boston. The bulk of the wool produced grades as "fine," "fine medium," or "medium," and in southern Colorado some coarse wool is produced. The grower received from 11 to 15 cents net last year. The cost of marketing is from 3 to 5 cents per pound. The weight of the improved sheep's fleece averages from 5 to 10 pounds, while the half and quarter blood makes only from 2 to 5 pounds. The average fleece of flocks owned by Mexicans, or the large holdings of the same class of sheep by Americans, produce an annual clip of 3½ pounds, while the improved sheep will clip an average fleece of about 7 pounds.

The best market for the wool is ordinarily at home, to the local buyer, or to the representatives of Eastern houses who visit the ranches during the shearing season. The best markets for sheep that are fit for slaughter are the local markets, such as Denver, Pueblo, and the mining camps and mountain towns. This demand usually exceeds the supply, owing to the fact that feeders from the corn-growing States contract for so many of the mature wethers that this double demand, while it keeps the local market short, results in giving the sheepman the top prices, a benefit which he appreciates in view of the low price for wool.

In addition to the sale of wethers, Colorado sheepmen are having many calls for stock sheep to go to Kansas, Nebraska, and Iowa, so that now most of the sheepmen annually dispose of from 15 to 30 per cent of their flocks. Most of these stock sales are made in the fall. Lambs are sold from $1 and upwards, ewes from $2.40 to $3, and the wethers bring from $3 to $3.50. These are prices realized at the ranch for ordinary sheep, and do not apply to highly improved animals. The average live weight of improved sheep sold for mutton is from 85 to 100 pounds, while the Mexican wethers range from 50 pounds and upwards.

The average expense per sheep a year varies, of course, in the different counties. Free or leased range, winter shelter, feed, and other expenses enter into the account, which makes it difficult to approximate a uniform cost. The estimates given the writer by representative sheepmen of the different counties vary from 50 cents to $1 per head. Some estimate that $500 will cover the annual expenses of a flock of 1,500 sheep. The wages paid to herders is $20 to $30 per month, exclusive of board.

The local advantages for sheep husbandry in Colorado are the cheap or free ranges, the cool, dry, and healthful climate, the ability of the State under irrigation to produce the supply of winter feed when necessary, the freedom from disease, the nutritious grasses which cure before frost comes and enable sheep to graze most of the year. The area of free range is large and can be utilized all of the year except in winter, when the flocks are supposed to be located on the home ranch or farm, where the winter supply of feed is stored. The water is always pure, cool, and abundant, if not always convenient. In most portions of the State where stock is held in winter there is natural shelter. The country seems naturally better adapted to sheep than to other domesticated animals. They are uniformly healthy, and there seems to be a constant immunity from the usual affections of sheep located in the more humid regions, such as foot-rot, ticks, maggots, and worms. There is always likely to be a good home market for mutton in the cities and towns, and throughout the mountain country generally. Sheepmen have the advantage of competing lines of railroads for shipping from Denver or Pueblo.

In every portion of the State where sheep are held there are of course obstacles and difficulties to be encountered. Those that are enumerated here do not all apply to any one county, put are intended to cover the State. Briefly mentioned they are as follows: Droughty summers and consequent shortage of winter feed, exorbitant freight rates, low prices for the average wools, absence of running water on the range and great depth of wells, expensive building and fencing materials, high rates of interest, limited range in some counties, poisonous weeds, such as loco, animal depredations, incompetent shepherds, high wages, no corn crops, insufficient cheap hay, low prices of wool, inability to control free range from traveling herds or "floaters," occasional snowy winters, would-be farmers and homesteaders occupying the Government land, severe winter storms or blizzards. These constitute the principal ills of the Colorado flockmaster.

Disease of any kind among sheep in Colorado is practically unknown. Scab is the only affection that has been at all prevalent, and that is pretty well eradicated or well under control, and is of little further consequence. An occasional case of tapeworm was reported in the counties of Las Animas, Lincoln, and Arapahoe.

The sheep business in Colorado, generally speaking, has recently recovered from a decline, and in most counties may be said to be in a fairly prosperous condition at present, with a bright outlook for the future, providing there is no further tariff agitation and the country does not become too thickly settled again, as it was in 1886 in what is known as the "rain belt" in eastern Colorado, where so much of the land was taken up by homesteaders and since largely abandoned after a few years of failure in cropping, meantime keeping out stockmen. The prevalence of scab some years ago also had a demoralizing influence

on the industry. The low price of wool, unsettled values generally on account of tariff agitation, together with high freight rates to Eastern wool markets and settlers homesteading Government land had depressed the business, but favorable legislation and the increased demand for mutton have checked the decline and given the industry a new stimulus. The demand for stock sheep is once more the rule in many sections of Colorado.

In regard to the best methods for profitably conducting sheep husbandry in Colorado under existing circumstances, it is well to state that the consensus of the opinions of representative sheepmen of different parts of the State is in substance as follows: First, select the best possible location for the home ranch or farm—a place where irrigation may be carried on to produce the necessary feed crops, and to have adjacent, or conveniently near, plenty of outside grazing land. Next, start with good sheep and run them in medium sized flocks. It pays better than to run large flocks of inferior sheep. Be sure to have plenty of grass and water in summer and provide abundant feed in winter, also shelter for at least three months. Change the range frequently. Keep the corral clean and have plenty of salt for the sheep. Have a competent man and dog with each flock, and bring the sheep into the corral at night. Take good care of them at all times and extra care of the lambs, and when the grass dries up in the fall put the lambs on the farm or home ranch. In breeding, grade up to produce more wool and mutton. Select extra good rams, either full fleeced and large sized Merinos or mutton breed rams to breed on the ewes. Experienced flockmasters say that sheep should be bred up so that 2-year-old wethers will weigh 100 pounds gross and shear 7 or 8 pounds of wool, and that such sheep with proper management will pay 25 per cent profit above all expenses. Do not trust too much to hired help. Give the business your personal attention, and let some other man run for the legislature. As a rule it is safe to provide feed and shelter for three months of the year; especially provide feed for early spring, when the sheep are weak and unable to "rustle." The aged sheep should be fattened on alfalfa for the mutton market. With good breeding, good feeding and watering, combined with eternal vigilance and good business sense, the sheep industry is profitable to the producer. A safe insurance against loss from exposure is the provision of shelter and feed.

Mr. Frank Hall, United States Treasury expert, in his report on the resources of Colorado, gives valuable information, from which some facts are gleaned which pertain to the sheep industry of this State. The price of agricultural products in Colorado for 1889 were as follows: Corn, per cwt., 86 cents; oats, per cwt., $1.05 to $1.07; wheat, per cwt., $1.60; hay, per ton, $10 to $16. Speaking of grasses, he says:

> The grasses, both tame and wild, are successfully grown, making great yields of nutritious hay, and, as shown by analysis, are nearly double in valuable albuminoids when compared with the same grasses in rainy sections. Timothy, orchard,

and blue grass make two crops a year, producing 1½ to 2½ tons per acre. Clovers are among the best forage plants, and are admirably adapted to the soil and climate; but the greatest, best, and most profitable, and useful is the alfalfa plant. It has no equal in any country, nor is there a section where it thrives more luxuriantly than in Colorado. Having once a good stand it defies all attempts to eradicate it. It makes three and sometimes four cuttings a year, averaging from 1½ to 3 tons an acre per cutting, and in some localities of the State it is cut each month from June to October.

The estimated wool clip of 1888 is 9,000,000 pounds. Vast improvement in breeds of cattle and sheep and in the qualities of wool produced has taken place in the past five to eight years. The better flocks of sheep have paid about 20 per cent on the capital invested. The clip per head in 1888 was a fraction over 6 pounds. Spanish Merinos bred up from Mexican ewes predominate. There are comparatively few Downs or mutton breeds in the State. The flocks are raised in many of the mountain forks and valleys as well as on the plains. All Colorado wools are shipped to Eastern markets because there are no manufactories here to consume products.

In regard to the future of the sheep industry of Colorado, the Field and Farm, published at Denver, has the following in its issue of March 7, 1891:

The most promising branch of the live-stock business just at present is, no doubt, the sheep industry. Colorado now offers special inducements in this line, and hundreds of people who are not in the business to-day will sooner or later become engaged in it. The occupation of the flock master, which has heretofore been carried on in a nomadic and very primitive manner, will hereafter be more carefully carried out. Irrigation must, from the necessity of the surroundings, become a great factor in the future success of wool-growing on the plains.

The old and unwarranted notion about allowing sheep to go through the winter without feeding, and with only the frozen grasses for subsistence, has gone by, and forage has become a regular item of annual expense to the sheep-raiser. Alfalfa hay has proven itself a splendid winter feed for the wooly tribes, and much of it has been consumed the present winter. Alfalfa is best grown by irrigation, and with the many farms under ditch bordering on the natural grazing areas, a vast amount of this forage will be provided hereafter, and sheep will be more generally fed as the years roll by.

It does not require a great acreage of alfalfa to provide a supply of hay sufficient to carry an ordinary band of sheep through the average Colorado winter. The time is fast approaching when many of the heavy sheep ranchers far out in the arid region will build storm dams at convenient places on their ranges to conserve the rains and irrigate small tracts of alfalfa land. The three cuttings a season will furnish a very satisfactory lot of prime hay, which may be fed out in severe winter weather as the emergency of the flock may demand. Other ranchmen who make a specialty of mutton will utilize great quantities of alfalfa in preparing their wethers for the winter market, which is a most profitable one in the cities and mountain towns of Colorado.

THE NUMBER OF SHEEP AND VALUE OF THE INDUSTRY.

The number of sheep in Colorado, the product of wool, and the monetary value of this particular industry have never been published officially except in an incidental way, and never accurately. The local

officials of the State have taken great pains to investigate the mining industries, the cattle business, and the irrigation enterprises, and have endeavored to collect all the valuable information possible regarding them for their own benefit, as well as for the edification of the general public both at home and abroad. The sheep industry, however, has been slighted; yet as a matter of fact there is no industry in Colorado that pays as large a percentage of profit on the investment or gives employment to as many persons for the same amount of capital employed. This significant statement is verified by the facts, and is an important item regarding the resources of Colorado.

The only counties in the State which did not receive taxes from sheep property during 1890 were Baca, Clear Creek, Dolores, Fremont, Gilpin, Hinsdale, Montezuma, Pitkin, and Sedgwick. The leading counties represented in the sheep industry are Arapahoe, Elbert, El Paso, Huerfano, Lincoln, Las Animas, Weld, Montrose, and Archuleta. In regard to the statement that has become current, that there are a smaller number of sheep in Colorado than there were two years ago, I have no hesitation in now saying, after fully investigating the matter, that it is a mistake. It is true that since 1888 an unusual number of sheep have been either shipped or driven out of the State, yet in this number there should be included a large number that were brought in from Oregon and New Mexico for the very purpose of selling to feeders. The increase of Colorado flocks during this period exceeded the number consumed within the State and those shipped or driven out; but these two sources of decrease together will not equal the number that have been increased by the lamb crops since 1888 by at least 100,000 head.

The report of the Statistician for the U. S. Department of Agriculture for January and February, 1891, gives the numbers and values of farm animals for Colorado as follows:

Animals.	Number.	Value.	Average.	Animals.	Number.	Value.	Average.
Horses	124,052	$6,567,661	$53.75	Hogs	23,606	$126,353	$5.35
Mules	4,800	401,616	83.67	Milch cows	62,225	1,750,831	28.11
Sheep	1,819,569	4,306,555	2.37	Other cattle	1,017,465	16,048,133	15.77

The Statistician's reports are ordinarily very accurate, and accepted as such; but as far as Colorado is concerned the numbers of both cattle and sheep are placed too high, and the average value of cattle is also in excess of actual value.

This report also places the average value of each sheep in the United States at $2.50, and places the average value of Colorado sheep at $2.37. On this basis the only States or Territories west of the Mississippi River that equal or exceed the average value of sheep in this State are Minnesota, Iowa, Missouri, Dakota, Montana, Utah, and Washington; and, with the exception of Utah, none have nearly so many sheep. This is certainly a creditable comparison for Colorado.

Another estimate of the number of live stock in Colorado was made by the live-stock department of Atchison, Topeka and Santa Fé Railroad Company, which is as follows: Horses, 227,690; mules and asses, 13,770; cattle, 1,000,760; goats, 7,150; swine, 38,010; and sheep, 854,800. They also estimate the number of steer cattle, from yearlings up, for sale and which can be shipped during 1891, at 300,000 head, and the number of wethers for sale and shipment during 1891 at 213,700 head.

The Colorado Bureau of Immigration, which has devoted considerable attention to collecting information regarding the resources of the State and in making exhibits of her products, in their investigations show that but little attention was devoted to sheep, the board seeming to rely on the assessors' reports mainly for information about this industry. Of the sheep on hand during 1890, they estimate that 253,774 were grown for mutton and 572,034 for wool; in all, 825,808 sheep in the State—an increase of 168,262 head over the number reported by the assessors to the auditor of State.

In making an estimate for this report the number of sheep given by the auditor of State, in his last biennial report for 1890, is taken as a basis for calculation as to the actual number. The auditor's report simply consists of an abstract of the number reported by the assessors in each county for taxation purposes, and the total number given for the State is 657,546, valued at $758,584. To this number should first be added 200,000 head, the number known to have been sold and shipped or driven out of the State before the assessor made his rounds, and this would bring the number up to 857,546 head, giving an excess of over 20,000 above the board of immigration's estimate. To this number there should be added the lamb crop of 1890, which at a low estimate is 214,454 head, and is not included in the assessors' inventory. This would bring the number up to 1,062,000 head, and to this can safely be added 60 per cent more, which gives a total number, at a conservative estimate, of 1,699,200 sheep now on hand in Colorado. The 60 per cent increase is the lowest average estimate that reputable sheep men say should be added to the assessor's report to give the actual number, lambs not included.

The average value of the different animals of the flocks may be classified as follows: Lambs, $2; ewes, $2.75; wethers, $3; which would give a total value of the sheep of the State at about $4,462,500. The wool clip of 1890 is estimated by many at 11,000,000 pounds, but from the best information, based upon the amount left in the hands of the growers in December, 1890, and the shipments made up to that time, the annual wool clip for 1890 will not exceed 10,000,000 pounds, valued at about $1,500,000. An estimate of other property necessary for the prosecution of the business, such as ranches, ranch property, leases, etc., added to other items, would give what the sheep industry represents to the State of Colorado, which I think, at a low conservative esti-

mate, to be at least $10,000,000. Further comparing the sheep industry, properly managed, with any other industry of the State, it is by far the best paying agricultural pursuit in Colorado. At the present rate of improvement, unless some unusually adverse condition or unforeseen calamity besets the industry, it will, before another decade passes, represent at least a valuation of $25,000,000.

SHEEP LAWS.

The laws relating to the inspection of flocks have been very beneficial to the industry affording necessary protection from "floaters" or roving flocks of sheep that have no regular range or habitation. The sheep laws of Colorado are very similar to those of Wyoming, so that only such portions of the law are given here as may be of special interest to flock masters generally. The laws relating to live stock in general in Colorado are specially favorable and helpful to those engaged in the animal industry.

The sheep inspection law in section 1 provides that the county commissioners in every county having 2,000 sheep shall appoint a sheep inspector for that county.

Section 2 provides that the inspector shall inspect every flock of sheep which he knows or is informed has the scab or any other contagious disease, and report in writing the result of said inspection to the county clerk. If found diseased, he shall reinspect the flock every two weeks and report as before, until the same is cured. If the flock is removed 6 miles from the range of other sheep, he shall make an inspection every three months.

Section 3 provides that upon the arrival of any flock of sheep into the State the owner or agent shall immediately report them to the inspector of the county for inspection, etc.

Section 4 provides that diseased sheep shall not be herded within 1 mile of any ground accustomed to be ranged upon by any other sheep, and that they shall be restrained from passing over or traveling upon or within 1 mile of any public highway or road. In case this can not be done the sheep shall immediately be removed to a locality where they shall not be permitted to range within less than 6 miles of any other sheep, until they are reported free from disease.

Sections 5 to 13 relate to fines, duties, etc., of owners, inspectors, and others.

Section 14 provides that every owner having contagiously diseased sheep shall dip or otherwise treat the same on his own premises, and that when he has more than one ranch or set of ranches he may drive the sheep over intermediate ranges to where his dipping works or other facilities for treating the disease are situated, but in so doing he shall consult the owners or occupants of said ranges as to where he shall cross the same, and in no case shall he enter another's corral, or water at his troughs or watering places, unless he has the written or otherwise expressed consent of the owner.

Section 16 provides that no person shall keep or herd sheep to the number of ten or more at or within 2 miles of any city, town, or village in this State; that the act shall not prevent any one from driving sheep to market, etc.; that the act shall not apply to any person who owns a stock ranch or farm within the above-described limits.

The scalp bounty law is another favorable provision for the sheepmen of the State. The amount of bounties paid out for wild animals' scalps in 1890 was $24,781. The counties which received the largest bounties were Arapahoe, Eagle, Garfield, Las Animas, Mesa, Rio Blanco, and Routt. Each of these counties received about $1,000 or more.

The law provides that every person who shall kill a wolf or coyote shall receive a premium of $1 for each such animal killed, and $10 for every bear or mountain lion. Every person claiming such premium shall produce the scalp, including the ears, entire, to the county treasurer of the county in which the animal was killed, within three months after the killing. And such person shall swear to the truth of his statements.

The county treasurer shall pay all premiums, and charge them up to the State. He shall burn all scalps in the presence of a reputable witness. Heavy fines and penalties are imposed upon any person for deception or otherwise trying to defraud the State.

In some portions of the State live stock at certain seasons of the year become poisoned from eating the loco weed. The State has in force for the eradication of the weed a law which went into effect in 1881, and since then the State has paid out in premiums on loco weed certificates the sum of $425,139.67. The least amount paid out in any one year was in 1881, amounting to $6,597.39; the largest sum was in 1884, and was $116,944.10. In 1890 the loco weed certificates only amounted to $16,910.24.

The loco law provides that any person who shall dig up, not less than 3 inches below the surface of the ground, any loco weed during the months of May, June, and July shall receive a premium of 1½ cents per pound for each pound of such weed dug up, the stipulation being made that the weed shall be weighed when thoroughly dry. The claimant when producing the weed must swear that it is loco weed, and was dug up within the last two months. The county clerk must certify to weight of weeds, and then burn them. All such premiums are paid out of the State treasury.

NOTES FROM PERSONAL EXPERIENCE.

The following pages contain valuable information and pertinent pointers regarding the sheep industry of Colorado. It is the expression of wool-growers in their own language, representing their views, experience, or observation on various practical subjects relating to the business of

wool and mutton production. The men making the statements are practical sheepmen, representing the different sheep districts of the State.

H. C. Sherman, Sterling, Logan County:

Brains are required the same as in any other business. It requires constant care and watchfulness; eternal vigilance is the price of success. It is a losing business without such qualifications, but with them and a good location it is above an average in Colorado.

H. Giraudot, Orchard, Morgan County:

We generally sell about the same number of wethers and dry ewes as will equal the number of lambs raised. We mean to keep our number good and not increase the number of sheep in the flock. The most profitable flock to run in is a band of 1,500 head. But if the flockmaster has sufficient range to permit a change of pasture about twice or three times a month in winter, he could run double the number in the flock.

J. J. Bristol, Bristol, Larimer County:

The general outlook for sheep business is not encouraging. The range is overstocked and vast tracts are fenced, so that there is not the room for the business to extend. For the past six years the business has not been profitable, and nearly all the sheep have been disposed of. This section formerly supported about 75,000 sheep; now, there are not 6,000 in the county.

Dudley and Chalmers, Garo, Park County:

On account of the altitude, sheep are very free from disease and put on flesh quickly in summer during the green grazing, and when properly taken care of in winter by feeding our very strong, rich hay, they will grow to good size—100 pounds for this class of sheep, which shear 8 pounds or upwards of medium and fine medium wool. We never corral with fence except during lambing and shearing season, which makes much less dirt in the wool.

Ed. West, Trinidad, Las Animas County:

I have handled sheep here for eighteen years. I consider them away ahead of any other kind of stock for making money. I have both cattle and horses, but there is no comparison for profits. "Give me more sheep." The care of them is a lonesome life, and they require good management and a live man. No "deadhead" has any business with sheep. Only about one man in five that starts in the business ever makes the sheep business a success in this country.

Walt. M. Houser, Gardiner, Huerfano County:

Will say our sheep in Huerfano County are generally of too small carcass, also shear too light a fleece. I think our model sheep should be pure, or half French and one-half Spanish Merino rams, crossed on our common Mexican-grade sheep. I think when wool-growers breed to good rams and procure feed for the flocks in winter they will generally be prosperous.

George F. Hodge, Deer Trail, Arapahoe County:

Sheep can be kept in this State profitably by any man exercising good judgment and attending to his business. Grain can be got at very low rates, owing to the number of railroads, and hay can be cut almost anywhere. All good sheepmen are prepared for winter, and generally come out in spring with feed to spare. For the last three winters there has not been any necessity to feed outside of the range. A sheep well summered is half wintered, and nearly all sheepmen here now understand it so.

William B. Miner, Fort Collins, Larimer County:

I have been in the range sheep business in Colorado and California, and I think it the best business in the world if properly attended to, if the man be a natural sheepman. But every man can not make money at the business, for he will not give it proper attention at the proper time. A very small per cent of the men in this section have made money at the business for the reasons I have stated.

H. Schneider, Atwood, Logan County:

Until the last five years our main dependence was wool, but since that time our surplus sheep have been sold for mutton. Had it not been for this source of revenue, owing to the prevailing low price of wool, but few sheep would have been held here now. Men who have properly cared for their sheep have done fairly well; others have failed. We feed alfalfa, an excellent and cheap feed; only those who have land under ditch can grow it. I have been sheep-raising here for the last seventeen years, and have been fairly successful.

John Robertson, Meeker, Rio Blanco County:

I was twenty years a Scotch farmer and stock-raiser, spent two years in West Virginia, some time in Virginia, but neither State suited me as Colorado does. Now I can make a fairly good living, and my past practical experience is all required here.

N. E. Wheeler, Carr, Weld County:

The cost of running sheep varies, as some men run strictly sheep, others mixed farming, and others stock, and very few keep any records or sheep account. However, sheep are the only stock that has paid any profit for the past four years with proper handling There is considerable hard work, great risk, and none too much pay for the sheepmen.

Edward K. Packard, Eaton, Weld County:

In ten years' experience I have lost money one year, come out even one year, and balance of time got ahead some. I like the business and have given close attention to it. I start into the winter with about 2,000, and sell mutton during the winter to make room for the increase in the spring. When a ewe gets six years old I turn her off for mutton.

R. J. Sheridan, Monte Vista, Rio Grande County:

My experience is based on six years' practical knowledge in the Rocky Mountains, in an altitude varying from 7,000 to 10,000 feet above sea level. It may be useful to state that besides the great advantages in the increase of quantity and quality of wool by the grading-up process from native mothers and Merino rams, that the graded animals themselves are better able (all things else being equal) to fight the hardships of early spring than the native stock. This I attribute to their warmer and weightier fleeces. Were I to take another departure for further improvement in mutton, with the least detriment to wool, I would use Cotswold rams on my graded Merino ewes and feed and corral in spring.

John E. Law, New Windsor, Weld County:

I now have 5,000 sheep, and have increased the weight of fleece in eight years from 4 to 7 pounds. The price realized for eight clips was from 14 to 18 cents. Of late years have ewes bring lambs only at 3, 4, and 5 years old. I cull out yearly all the old ewes and sell for what they bring, 50 cents to $2 per head. Have sold the wethers in fall or winter after they are 3 years old. In this way have had only young strong sheep to winter, and by taking out of flock all lambs that do not keep up in condition and any other weak sheep, and feeding them hay, I get the flock through the winter in good condition without much loss, if winter is reasonably fair. The ranges

are now so occupied we must count on having to feed more than formerly of winters. If users of the range could as individuals have security in their occupancy of their ranges it would be a great advantage over present conditions. Now one flock eats off the range from another, so one can not so well reserve one part of his range for winter feeding while using another part for summer, without danger of his reserved feed being partly taken by some one else. My ranges are perhaps as good as the average for producing pasture. My flocks range over something like eighty sections of land, and in the spring, before the new grass comes on, the old feed seems to be almost completely cleaned up. There are a great many horses and cattle feeding on the same ranges. To sum up, from an experience and observation of a number of years, should estimate that eight to ten sections of land would be needed to support well continuously 1,000 head of sheep, where sheep have exclusive use of range.

Alexander Day, Pueblo:

I am fully persuaded from long experience and close observation that by proper care and handling of the cross-bred sheep in smaller numbers there is no stock that can be handled with better results than can sheep. Alfalfa as a forage is unsurpassed by anything for sheep feed. Its rapid growth enables us to cut from 4 to 6 tons per acre. This will enable us to feed sheep very cheap in winter, and free range in summer gives us advantages over the Eastern States that will in the near future be of vast importance to Colorado. At present there is a great inquiry for stockers, a thing unknown for several years, and it is only the prejudice against the brutes that keeps many out of the business. It may not be out of place to say that my experience is that the demand for mutton has doubled in the United States in the last five years; and although wool may be low in Colorado, it is overbalanced in the high-priced mutton. Wool will pay the expenses, and the mutton is clear profit.

J. F. Gibbs, Greeley, Weld County:

There is no doubt, and I would be glad to have you emphasize the fact, that a large part of Colorado and the plain country generally will always be devoted to sheep-raising. It can never be irrigated, reservoirs or no reservoirs. The cattlemen can not use it to advantage. Sheepmen, protected, will sink wells and raise water for their flocks. With anything like a ghost of a chance farmers will raise sheep rather than cattle everywhere. Two crops per year are better than one. A bond with a wool coupon and mutton coupon is as good a bond as any with Uncle Sam's name on it.

W. N. Bachelder, Orchard, Morgan County:

Sheep business has been fair for the last ten years on account of the high prices for mutton. If bred for wool alone it would not have paid. There is or has been for the past four years a growing demand for feeders in Nebraska and Kansas; demand not so good this year, on account of short corn crop in those States. There is good money in sheep in this State if fed alfalfa hay three months. It is excellent feed for sheep and is produced in large quantities; in fact is our best crop in Colorado.

C. G. Strang, Hugo, Lincoln County:

My experience leads me to the conclusion that the best sheep for our section of the country is a grade produced by breeding up from Mexican stock with thoroughbred Merino rams and then crossing with first-class Shropshire or other varieties of Down sheep so as to combine the fine wool of the Merino and the hardy constitution of the Mexican with the mutton qualities of the Downs. Thoroughbred sheep do not seem to be able to stand the exposure and traveling to which sheep in large herds are necessarily exposed. Sheep-owners are feeding more grain and hay to their sheep and are building shelters. As a result they have increased the yield of wool and the size of the sheep. Better care and feed pay well.

William Green, Hastings, Las Animas County:

The Government would do well to make an inquiry into sheep scab and tapeworm amongst the flocks of the West. The loss of wool from scab, and lambs from tapeworm are very serious questions, which ought to be handled by the United States Government at once with a view to the discovery of preventives or remedies.

Rollan Sherman, Denver:

I have spent nearly twenty-five years in this State; have been engaged in sheep-raising twelve years; know when the first sheep came into this part of the State; know when the first herd of cattle was turned on this range. Cattle used to get fat here in winter, twenty years ago. But the range is too short now. I have seen 1,800 Indians and thousands of buffalo and antelope here. Men have tried to farm here but failed in this section. Without irrigation it is only fit for stock and best for sheep. Give the sheep industry proper protection and this State will treble her sheep industry. I have crossed the Shropshire ram on the Merino and think it a success in the line of wool and mutton.

UTAH.

The Territory of Utah, with its population in January, 1892, of 215,000, spread over a surface of 82,190 square miles, or 52,601,600 acres, presents a vast and interesting field of study. No Territory in the United States is oftener spoken of, more generally visited by people crossing the continent, and yet less is actually known about its varied and wonderful resources than of any other of the States and Territories.

The Territory forms a part of the great plateau of the Rocky Mountains, its valleys being elevated from 3,000 to 7,000 feet above the sea, while its mountain peaks reach an altitude of from 10,000 to 13,500 feet. The Wasatch Mountains extend from the northeastern to the southwestern part of the Territory, dividing it nearly equally, and it is in the northwestern half that we find Great Salt Lake and the great American desert. On the west of Great Salt Lake and extending farther south and also occupying more space is the Great Desert, which occupies an important place in this report, since it furnishes sustenance a part of the year to five-sixths of the sheep owned in the Territory.

RAINFALL AND IRRIGATION.

The annual precipitation of Utah is very light, ranging from 12 to 20 inches, or an average of 15.72 inches, nearly one-half of which falls during the months of March, April, and May—just the time needed to start vegetation.

The supply for irrigation purposes is furnished by the large number of springs and the melting of snows in the mountains, on some of which snow lies the year round, yet but little remains after August; but by that time the crops are all matured and very little or no water is needed to irrigate with. Irrigation is a great factor in the agriculture of the Territory, and is entitled to and receives considerable attention.

The total acreage of irrigable lands in Utah is 2,304,000, the number

of acres covered by present ditches is 735,226, leaving the number of acres that can be used when irrigated at 1,568,774. Thus it will be seen that only about one-third of the irrigable land suitable for agricultural purposes is under irrigation. One of the largest and most important irrigating canals in the Territory is that owned by the Bear River Canal Company, which, when completed, will irrigate 200,000 acres of land and also furnish Ogden with a large portion of the water necessary for that city. This canal heads in the Bear River Canyon and has a never-failing source of supply in Bear Lake. This company has expended nearly $2,000,000, and has over 100 miles of canals. Near the Toponee Ranch the water is carried over the Malad, 100 feet below the top of its banks, on an iron viaduct costing $30,000.

NUMBER OF SHEEP IN THE TERRITORY.

The number of sheep in the Territory in 1860 was 37,332; in 1870, 59,672; in 1880, 233,121; in 1890, 1,950,900, and in 1892, 2,800,000.

In obtaining the above access has been had to different records and careful comparisons were made, so that the figures given can be relied upon as nearly correct. It is hard to tell how the figures were obtained for the years 1890, 1891, and 1892. They have been published nearly everywhere, yet the assessors were not able to find quite one and a half million sheep in 1891; but they do not include any on their list under twelve months old. From conservative estimates carefully made by those who are in a position to know, there were owned in the Territory the 1st of January, 1892, 2,000,000 sheep one year old and over.

There would seem to be more than three times as many sheep in the Territory as of all other farm animals combined. Sheep husbandry is, in fact, the leading live-stock industry of Utah. This is especially true of the past three years, when sheep, in numbers, have reached their highest limit. This growth has made the greatest progress during the past five years, until now the range is pretty nearly stocked up to its capacity. Yet the sheep-feeders of Nebraska, Kansas, and Iowa have bought more largely in Utah than elsewhere during the past two years, and they are likely to keep the number down to an even basis. Another thing that will tend largely to keep the numbers from increasing is the demand that has sprung up the past year for lambs to feed for the mutton market. Buyers have been all over the Territory this season trying to contract for lambs, and some contracts for picked lambs are reported to have been made at or near Ogden at $2.25 per head. The usual asking price is $2, yet some have sold for $1.75 and as low as $1.50 per head, for October delivery.

RANGE FACILITIES.

Of the 52,600,000 acres in Utah, there is but little over 2,000,000 acres that can be used for agricultural purposes when irrigated. There are covered with salt and fresh water, and barren land where no vege-

tation of any kind grows, perhaps 5,000,000 acres. This would leave for range land between 40,000,000 and 45,000,000 acres, which would include both mountain and desert lands, the former furnishing winter and the latter the summer range.

The desert lands can only be used in the winter season when partly covered with snow. The snow hardly ever falls so deep on the desert as to cover the sage brush, of which one kind, called white sage, is very nutritious and upon it the sheep feed and do well. For variety, and nearly equal to the white sage for feed, is a bunch grass, which abounds, growing in apparently the most barren places. It ripens and cures early in the season, retaining all its nutriment. It remains for winter grazing, because no water is near for stock that might wander out on the desert during the grazing season. Bunch grass, like the sage brush, is rarely covered with snow. When feeding on it and the white sage sheep quench their thirst with snow. If it is a favorable season many of them come off the desert in fine condition. When the snow leaves the desert the sheep are removed to the foothills and lower lands, and continue to advance up the mountain side until July or August, when they are high up in the heart of the mountains, where they feed on wild wheat, meadow grass, peavine, and other mountain herbage, and browse on the quaking aspen and a variety of bushes and shrubs. As winter approaches they move down toward the lower lands and valleys. The amount of feed on the range depends on the fall of snow, which is lighter some seasons than others and melts off the mountains earlier, so that occasionally there is difficulty in getting water.

It has been demonstrated that in the high, dry, bracing air of the interior stock grow and fatten on much less than at the sea level, and the same degree of heat or cold, as marked by the thermometer, appears to affect them less.

The grazing lands of Utah are almost unlimited, and furnish a great variety of feed. They include the second tables of the river courses, the slopes of the foothills and lesser ranges not too far from water, and the coves and valleys of the mountains.

Some of the more valuable grazing lands are just above the line of where water can be carried for irrigation, but here the cattle hold the range, unless the sheepmen own it. Sheep will feed on range that cattle could not live on, and partly for this reason the cattlemen try to hold the best range. There has been more or less strife on this point, and the sheepmen fought the measure in the legislature which prohibited their flocks running to a stream nearer than 7 miles from a town or village.

In southern Utah very little or no feed is given to the sheep, but in the northern counties, where they do not run on the desert, many of them are fed during the severest part of winter. Grain is seldom made a part of their rations, but straw and alfalfa hay serve the purpose. Sometimes a little oats, bran, or chops are given, but those who never

fed alfalfa hay have no idea what an excellent feed it makes. In conversing with dairymen near Salt Lake City they invariably said: "No, we do not want ensilage to feed our cows; it is not as good as alfalfa hay, or as easily and cheaply fed."

GENERAL FACTS ABOUT SHEEP HUSBANDRY.

The class of sheep in Utah is mainly of the Merino type, and as the large French Merino rams are the principal ones used, the good effects are seen in the increased size of the carcass, and in the length and fineness of staple, so that it is safe to say that the average clip will run from 5½ to 6½ pounds. While the average weight of fleeces in Utah is a little below that of the principal Western States or Territories, her average shrinkage is 55 per cent, and is from 10 to 15 per cent less than the shrinkage in other States; hence the price paid for Utah wool is proportionately higher.

There are not very many flock-owners in southern Utah who shear twice a year, as it hardly pays. The usual time of shearing runs from the middle of April to the middle of June. During this season there are gangs of men who make a business of going from flock to flock to do the work. The sheep are often driven into a corral for shearing. A man that can not shear 100 sheep or more in a day is not wanted in the gang. They usually begin work early in the season at the south, working north, ending in the northern Territories late in July, when they return south again for the second or fall clipping.

Utah is a great field for the wool commission men of St. Louis, Chicago, Philadelphia, and Boston. They have their agents out soliciting consignments as soon as the shearing season opens. This brings the buyer right to the door of the Utah wool-grower, yet some of the larger flockowners ship their wool on their own account, and still others ship through their local wool-growers' associations. There is a Territorial Wool-growers' Association, besides several county and local associations. At Nephi, in Juab County, the Utah Wool-growers' Company has a membership of about seventy-five, representing some 400,000 sheep. It has built a large warehouse, and buys the wool direct from its members or ships it and sells it for them. Until the past year Nephi has been the principal wool market for central and southern Utah. Now the bulk of the trade is at Salina, a little farther south, and the terminus of an extension of the Rio Grande and Western Railroad.

The breeding season is during November and December. The average number is about 3 rams for 100 ewes, yet some run 2 to 100. The rams are often permitted to run with the flock until spring, unless the owner has a good place to keep them or herd them separately. A very few are using Shropshire rams, others Southdowns or Cotswolds, but the majority use the French and Spanish Merino and their grades. Of late years more attention has been given to the selection of well-bred rams to use on the range flocks, and the good results are notice-

able in the improvement, both in the size of carcass and length and fineness of staple. The percentage of ewes that fail to breed is not very great, not exceeding 10 per cent.

Owners run their sheep in flocks of 2,000 to 2,500 head each, placed in charge of a competent man, who is paid from $35 to $45 per month, including board. A company outfit is provided, consisting of team and wagon, tent, feed, provisions, etc. It takes one man to look after the outfit, do the cooking, and look after changing location occasionally. Often boys are employed as herders. A company outfit goes with from one to three flocks. It is essential to the success of the flock to have a good, careful, steady man in charge, especially during lambing season, which is perhaps the most critical period of the year. Should the lambing season be cold or stormy the loss is often over 50 per cent. The lambing season is the most important part of the year to the flockmaster, and is the time when extra watchfulness and vigilance are necessary if a large percentage of the lambs be saved. Sheep are liable to scatter and get lost; the ewe may leave her lamb, or wild animals may take it. Extra help is often provided during this season by the successful and humane owner; others separate the breeding ewes from the rest of the flock, and range them where some protection is afforded and where they may be kept quiet, with plenty of feed and water. After the lamb gets dry and nurses a few times it is able to get along very well. There is not one sheep-owner in a hundred in this Territory who has shelter for his flocks more than the natural protection afforded by rocks, valleys, canyons, bushes, and trees.

There are not many flocks owned in Utah of less size than 1,000 head, and from this they run up to 15,000, and some to 25,000 head; but the average size of flocks owned by one person or firm will run from 3,500 to 4,500. A person who does not own at least 1,000 head or more is certainly not in the business to any extent, as he can not afford the expense of an outfit for a small flock. There are a number of persons in the business who began as herders, saved their wages, invested in sheep, and after a time became flockmasters.

If a flockmaster saves from 65 to 75 per cent of his lambs it is about all that he expects. Much depends upon the method pursued, the condition of the season, and range occupied. Under some conditions 85 to 90 per cent of the lambs are saved, but these are exceptions.

Sheep, if properly cared for, are generally very healthy and quite free from diseases. Watchful care is necessary to prevent the scab from getting started, but by the timely use of the best sheep dips this disease can be managed. The big-head is about the greatest obstacle to contend against, as there seems to have been no effective remedy discovered for it. The loss by wild animals and dogs is not as great as from exposure, hard winters, or lack of feed.

The future outlook for the industry is good, since there is a growing demand for mutton, and a market opened up by feeders from Nebraska

and Kansas. Mutton sheep have advanced from $2.50 to $3.50, and even more is asked for nice picked feeders. The number of sheep in the Territory for the past year or two has not materially changed, and there, perhaps, will not be much change in this respect for the next year or two.

Utah depends largely upon outside demands for her wool product. There are not far from 100,000 sheep consumed for mutton within her borders. Salt Lake City will use half of that number in a year. Then from 500,000 to 600,000 will be shipped and driven out of the Territory for mutton or to feed. As previously stated, a large demand has lately sprung up for lambs for the Eastern mutton market, and while sheepmen are loath to part with them, the prices of $1.50 to $2.25 per head will secure from 50,000 to 75,000 head this year. It is believed that the prices will not go lower. A large number of owners have determined to feed and fatten their own mutton and ship to market themselves. Corn and oats are too scarce and high priced to feed profitably, yet these men say that does not matter, as they have a cheaper and much better feed in alfalfa—that it will not take many tons of it to fatten a thousand sheep for market, and that they can compete successfully with those in Nebraska who feed corn or oats, or both. This means the opening of a new and profitable branch of the business, and will stimulate the farmers to grow more than 300,000 tons of alfalfa a year to supply the increased demand made by the sheep-feeders alone. It also means that hereafter more alfalfa will be fed during the bad weather in winter to the common stock sheep throughout the Territory where before no feed was given. Thus we see a very great change for the better in the near future. The business will be more settled, will be placed on a firmer basis, and be more profitably conducted in every way.

It is not a very easy matter to get at the exact amount of the 1892 wool clip of Utah, but it will be found to run close to 13,500,000 pounds. Of this amount there are worked up by Utah mills at least 1,000,000 pounds. The largest and most extensive woolen factory in the Territory is the Provo Woolen Mills, established nearly twenty years ago at Provo. These mills have a capital stock of $300,000, and consume annually 500,000 pounds of Utah wool. They manufacture flannels, linseys, cassimeres, blankets, shawls, yarns, overshirts, underwear, knit hosiery, etc. The next mill of importance is that of the Deseret Woolen Mills Company, at Salt Lake City, which has a capacity of 350,000 to 400,000 pounds of wool per year. These are the two principal woolen mills, yet there are several other smaller ones. It would seem that there is a good opening in the Territory for other woolen factories, for they can evidently take the wool product as it comes from the grower and work it up as cheaply as any of the factories in the East, and have the expense of transporation a long distance in their favor.

The prices realized on the clip of 1890 were even a little better than

those of last year, which ranged from 17 to 20 cents per pound. The prices for the clip of 1892 will not average quite so much as that of last year, the ruling local prices being for fine 15 to 18 cents, and medium from 1½ cents more. It would seem that the gradual falling off of the price each year would be a disadvantage to the wool-grower and cut heavily on the profits of the industry, but the decline in the price has in a measure been offset by a lighter commission, transportation, storage, insurance, drayage, interest on advances, etc. The wool-grower does not have to wait so long for returns on his shipment, and commission men are satisfied to handle and sell the clip and take less money for their services than formerly.

EXPERIENCE OF SHEEP-OWNERS.

The following expressions from experienced and successful sheepmen will accurately reflect the status of the industry in Utah at the present time:

J. S. Houts, Ogden, Weber County:

On account of our high altitude, dry climate, and free range we can raise sheep cheaper here than any place in the United States. Sheep are healthier and grow more wool. Alfalfa is the best feed in the world for sheep, for on it they soon get fat. Sheepmen are learning its value and feeding more of it each winter, and thus get better sheep. Our shearing is done by people who make it a business, and who are able to clip 100 sheep per day.

Thomas R. Cutler, Lehi, Utah County:

The average size of flocks in this section is 2,000 head, ranged on public lands. Losses by wild animals are not more than 1 per cent, and from exposure not more than 2½ per cent. We breed our ewes in December, allowing about one ram to run with 50 ewes for from one to two months, and we raise about 40 per cent of our lambs. Sheep are profitable in this country if well cared for, but only those accustomed to our conditions can succeed. Many sheep will be fed at home in the future, as there is trouble about who shall occupy the range, the sheepmen or cattlemen.

William E. Watson, Mount Pleasant, San Pete County:

Our summer range is on the mountains, browsing shrubbery, grass, and wild oats, in the winter it is desert range, white sagebrush and bunch grass. The usual shearing time is May and June. Most of the wool is sold to commission men, and some ship through local associations. My fleeces average 6 pounds. Our settlers and small cattlemen are prejudiced against the sheepmen. Sometimes our range gets very short. We lose more sheep from the big-head than from scab or other diseases. The business requires careful attention, frequent changes of ranges, often moving from 200 to 300 miles to obtain a location near water.

Charles Adams, Prowan, Iron County:

It is customary for most of us here in the southwest to shear our sheep twice a year—in April and October; and we get, on an average, about 3 pounds of wool to a sheep. Sheep eat snow for drink from four to six months a year. Our range is being overstocked, so that when we have an unusually dry season some flocks have to move out. Where care is exercised and sheep dipped occasionally, scab does not bother much, and sheep are generally healthy. Forty to fifty dollars per month is paid for herdsmen, and the average cost per year per sheep, all expenses, runs from 75 cents to $1.

George A. Bradshaw, Beaver, Beaver County:

We are using French Merino rams; some few use the Spanish and others the Delaine. Our sheep shear 7 pounds of medium to medium fine wool. We run from 2,000 to 2,500 sheep in a flock, have a team and wagon, and keep moving from place to place, only halting during lambing season and to shear the sheep. The average price paid for help is $30 and board. I have been engaged in the sheep business over fifteen years, and I am satisfied with it.

William Probert, Provo, Utah County:

While some few are breeding to the Downs, the majority of owners are satisfied with the French Merino. We own our summer range and herd on Government land in the winter. In winters we sometimes have severe storms and cold spells of weather, from which occasionally heavy losses occur, and frequently in lambing season if the weather is unfavorable we meet with severe losses.

J. M. Jensen, Box Elder, Box Elder County:

Here in northern Utah I use the mountain country for summer range, and in winter the low hills and flats; and during the worst weather I feed alfalfa hay. By separating my breeding ewes from my stock sheep I save 85 to 100 per cent of my lambs. My average clip is 7 pounds. Prices range from $2 to $4 per head for muttons or stockers, and their average weight is 120 pounds. The average wages paid herders and campmen per month is $35 to $40, so that the average cost of all expenses is 75 cents per head annually.

James Whittaker, Junction, Piute County:

The class of sheep here is Merino grades, upon which some use the Merino or Cotswold ram. As our sheep must be kept up, we fix a day and a large number of expert shearers soon strip a flock of their fleeces. To make a success of the business requires close and careful attention—move camp every eight or ten days during lambing season, guard night and day to keep away the coyotes, and never let the scab get the start of you, but use the best dips often. The outlook is not bright on account of the low price of wool, legislative enactments requiring us to keep away from mountain streams near villages, etc.

A. McFarland, Weber, Weber County:

Our profits from sheep here have been very satisfactory. The land is not very rich naturally, but by feeding sheep upon it in the winter we have so increased its fertility that land producing but 15 bushels of wheat to the acre has been made to yield 50 bushels. Having the use of the Government land during the summer, the longest season with us, it makes the expense light, not to exceed $1 per head. We own about 13,000 sheep, sometimes more and sometimes less, owing to our sales. Our flock averages 6-pound fleeces.

Ralph H. Hunt, Weber, Weber County:

Last winter was a severe one on sheep in our section, and then the late, cold, stormy spring has been a hard one on sheep that were shorn early, and in many cases heavy losses have occurred among the lambs. Our present grazing prospects were never better, owing to the unusual late rains. Those who winter their sheep on the desert west of Salt Lake do not feed or shelter, but we do on this side of the lake. Our feed is alfalfa hay almost exclusively, which can not be surpassed by any kind of feed that grows, and we harvest about three crops per year, or about 8 tons per acre.

John S. Painter, Nephi, Juab County:

Our summer range in the mountains usually is very good, with plenty of water

and shade; the winter range on the desert is also good while snow lasts. We breed principally to French Merino rams during December, and many let them remain with the flock until shearing time in April and May. Our shearing is done by gangs of professional shearers, who easily handle 1,500 per day. Sometimes we sell our wool to local buyers, or to our association, or ship to Eastern markets through them. Buyers come here mostly from Nebraska and buy our muttons to feed. Sheep are getting too numerous for our range, and laws passed by our legislature requiring us to keep our sheep from streams near towns and villages are liable to cause some trouble.

R. J. Cutler & Sons, Glendale, Kane County:

We have been engaged in the business for twenty years, and are satisfied that Utah can not be beaten by any country for ranging sheep, though to make it a success one must get good herders that will stay with the flocks, keep them from straying, and move them frequently to good feed. The average wages paid for good help is $35 per month, including board. We estimate that it does not cost us more than 25 cents per head per year, and we keep on an average 10,000 head. Of course we range the year round, and do not feed or shelter. Our shearing is done sometimes during April, May, or June, owing to the season. Some convenient place is secured large enough to hold a flock, with small pens adjoining, where a few head are run in, shorn, and the wool sacked on the ground, and later hauled to the railroad station, sold there to wool-buyers or shipped to Boston, Philadelphia, Chicago, or St. Louis. We realize from 15 to 19 cents net for it, so that from our common sheep the wool brings us from 75 cents to $1.25.

Charles Crane, Kanosh, Millard County:

I range about 20,000 French Merino grades, and breed to pure French Merinos from 1 to 4 years old; unless it is a very unfavorable season, raise 80 per cent of the lambs. The clip from my flock runs from 8½ to 14 pounds. I own 4,000 acres of land, and I estimate the average cost per sheep a year at 70 cents. The advantages possessed by Utah for sheep husbandry in the mountain and desert lands, where no other domestic animals can exist, and for which no other use will ever be found, can not be surpassed. The greatest obstacles we have to encounter are wolves, lynx, hard winters, cold Mays during lambing season, poor feed, and poor management. The public domain should be leased to actual stockmen, and the lease money paid applied to the purchase of the domain; then the ranges would be protected and improved, pastures cultivated, and seed sown on the land.

A. M. Everts, Nephi, Juab County:

I raised thoroughbred Merinos in Vermont for thirty years. I came on a visit to Utah five years ago, became interested in caring for sheep in the winter of 1887 and 1888, on the great desert range, where at one time could be seen 30 sheep wagons, with an average number of 2,000 with each wagon. Among all these I saw but few rams fit for use. In the spring of 1888 I shipped out 300 registered Vermont Merino rams for sale, and have since made other similar shipments until the whole number would reach 2,000 head, and all have been used to grade up the loose-wooled, light-shearing sheep so common in all parts of the range country. I have crossed the continent seventeen times, but have found no better sheep country than the free mountain ranges in this Territory in summer, and the American desert in winter. The only shelter that 99 out of 100 sheep get is God's great and glorious firmament. Our best market for wool is Nephi or Salina, and for mutton every herd is visited by buyers.

SHEEP SHEARING ON RANCH, WYOMING.

A RANCH IN MIDDLE PARK, COL.

CHAPTER III.

THE SHEEP INDUSTRY IN MINNESOTA, IOWA, NEBRASKA, MISSOURI, AND KANSAS.

MINNESOTA.

The climatic conditions of Minnesota are favorable for the sheep industry. Malarial diseases are almost unknown and the atmosphere is dry and invigorating. The average mean temperature in summer is 70.50° F.; winter mean, 25°. The annual mean temperature for St. Paul and vicinity in 1891 was 44°. There is an interval of five months or more nearly every year between killing frosts, when the temperature is favorable to vegetation.

The Minnesota wolf-bounty law assists in promoting the sheep industry, and thus enhancing the taxable wealth of the State. This law provides a bounty of $5 for the scalp of any wolf killed between the months of November and May, and $3 for those killed from May 1 to November 1. When a wolf is killed, if the bounty is to be secured, the head and ears complete must be delivered to the county auditor in twenty days, and oath must be made that it was killed within the county. This is a wise provision and of great value to the State as well as to stock-owners, and should be kept in force so long as wolves are prevalent.

The adaptability of Minnesota for the sheep industry and the favor with which it is regarded by the farmers and breeders is clearly manifest by the steady development of the industry since sheep were first introduced into the State. Authentic statistics give the number of sheep for different periods during the past thirty-two years, as follows: The number in 1860 was 13,044; in 1870, 131,343; in 1880, 267,598; in 1890, 327,375; and in 1892 it was 357,101.

NUMBER AND VALUE OF SHEEP.

The distribution of sheep throughout the State is ascertained by the abstract of assessment of 1891 for taxation purposes. This shows that the largest number of sheep owned in any one county was in Cottonwood, which received taxes on 20,818 head. The counties having 10,000 and less than 15,000 were Jackson and Olmsted; those having 5,000 and less than 10,000 are Blue Earth, Clay, Dakota, Dodge, Douglas, Faribault, Fillmore, Goodhue, Kandiyohi, Lincoln, Lyon, Martin, Mower, Murray, Nobles, Ottertail, Polk, Redwood, Renville, Rice, Stearns, Steele, Wabasha, Wright, and Yellow Medicine; those having 1,000

and less than 5,000 are Anoka, Becker, Big Stone, Brown, Carver, Chippewa, Chisago, Freeborn, Grant, Hennepin, Houston, Isanti, Kittson, Lac qui Parle, Le Sueur, McLeod, Marshall, Meeker, Morrison, Nicollet, Norman, Pipestone, Pope, Rock, Scott, Sibley, Stevens, Swift, Todd, Wadena, Waseca, Washington, Watonwan, Wilkin, and Winona; those having 500 and less than 1,000 are Benton, Ramsey, St. Louis, and Sherburne; and those having less than 100 are Aitkin, Carlton, and Lake. The only county which paid no taxes on sheep was Itasca. The average assessed value for the State was $1.32, ranging far less than $1 in some counties to more than $2 in others.

The annual report of the St. Paul Chamber of Commerce for 1892 gives the total number of live stock in Minnesota for 1891 as follows: Sheep, 337,078; hogs, 357,078; cattle, 1,065,229; and horses, 461,453.

They also report the wool clips for 1890 as 677,120 pounds, and for 1891 as 1,361,725 pounds.

According to the ninth annual report of Minneapolis Chamber of Commerce the total shipments of wool received during 1891 were 5,442,202 pounds. Total wool shipments from Minneapolis were 5,436,825 pounds.

There are three stockyard companies in the vicinity of St. Paul and Minneapolis, which are designated as follows: The Union, Twin City, and the Minnesota Transfer. Officials of these stockyards give the amount of sheep handled in each yard for the year 1891 as follows: Union, 89,423; Twin City, 60,550; Minnesota Transfer, 26,895.

While these live-stock markets are yet in their infancy their growth has been vigorous and substantial. With the rapid yet substantial development of the live-stock interests of the Northwest the "twin cities" seem likely to have one of the leading live-stock markets of this country. The establishment of large packing houses indicates what may be expected. The farmers of Minnesota are peculiarly fortunate in having a home market of such magnitude both for wool and mutton, as well as all classes of live stock. Dealers as well as manufacturers handle considerable wool at Minneapolis, and there are located here branch wool houses from Eastern markets.

The number of sheep in Minnesota at the present time, not including the lamb crop of 1892, is not less than 400,000 head; value, $1,250,000. The wool clip for 1892 will exceed 2,000,000 pounds. From the present condition of the sheep industry there is every reason to believe that sheep will from this time become more and more the favorite class of stock for the enterprising and general farmer of the State.

GENERAL FACTS ABOUT THE INDUSTRY.

Sheep-raising in Minnesota can not be regarded as a leading pursuit of the farmers and stockmen. In value sheep rank below all other classes of live stock and in number are exceeded by every other class, except horses. In fact, there are more dogs than sheep in the State.

Yet, while sheep do not rank in number or value with the other classes of domestic animals, there are enough to form the basis of an important branch of the animal industry of the State. Though sheep are to be found in nearly every county, not one farmer in ten raises them. Stock-raising is not to any considerable extent an exclusive business in the State, but is a part of mixed farming. The general farmer raises a few horses, hogs, cattle and occasionally sheep are added. Only a limited number of farmers raise sheep, and the majority of them do so on a small scale. The bulk of the sheep to-day mainly consist of pure-bred or high-grade Cotswolds, Southdowns, Shropshires, Merinos, and Oxford Downs—ranking numerically in about the order named. The flocks as a rule range from 10 to 50 in number, where kept on farms. The exceptions are the Merino flocks and those of the men who make a specialty of raising pure-bred mutton sheep. It is stated that in Renville County, which is probably an average sheep county of the State, there is only an average of about 6 head of sheep to each farm in the county. What are known as the prairie counties have the largest number of sheep. There seems to be a more general purpose among the farmers in these counties to breed up their flocks as closely as possible to pure-breds.

The sheep industry in Minnesota is in good condition and thriving. Mutton is the chief object of the sheep-raisers, although the wool product is by no means lost sight of, and some few breed with special reference to it. Experienced flockmasters breed for both wool and mutton. Sheep now pay the farmer better than any other class of stock, and in the prairie country, those who are now engaged in raising a few sheep find it the most profitable branch of mixed husbandry.

The most notable recent change in the sheep industry is the change from fine-wools to the mutton breeds, like the Cotswolds or the Downs.

Sheep-raising compared with other branches of live-stock husbandry is more certain in results and requires less capital. It is a significant fact that while the growers of every other class of stock are complaining, the sheep-raiser is apparently contented and well satisfied. The only other class of stock which seems to promise equal profits are well-bred horses, and they require considerable more capital. The chief obstacle to sheep husbandry is the fact that it about doubles the cost of fencing. It is believed by most of the shepherds that sheep of the various breeds and grades, without exception, show improvement in both the wool and constitution when brought into Minnesota from other States. Breeding animals are brought from the East and wethers for feeding from the West.

The class of rams used on the Minnesota flocks include all the improved breeds, pure-bred and high grades, and occasionally crossbreeds are used as an experiment. However, experienced growers now use pure-bred animals of the following breeds: Cotswold, Oxford Down,

Shropshire, Southdown, and Merino. The age of the buck used is from a yearling up to 5 years old. The usual time for breeding the ewes is during November or December, and one ram usually suffices for the average flock, although in large flocks each ram is given about 50 ewes. The ram is usually kept with the flock from four to six weeks, and is then removed until spring, when he is allowed to run with the flock until September 1. During the breeding season the usual practice is to let the buck remain with the ewes about six hours out of twenty-four. There are some exceptions, the ewes being bred much earlier where it is an object to raise spring lambs for market, and often a greater number of ewes are bred where hand breeding is practiced and the buck is judiciously fed and handled during the breeding season. As the flocks are small and receive proper care, it is seldom that a ewe fails to breed, unless she is very old. The average per cent of lambs raised varies from 80 to 120, the excess over 100 being due chiefly to the great number of twins among the mutton breeds. It is perhaps a safe estimate that the average for the State is not far short of 95 per cent, ravages of wolves and dogs not considered.

The time of shearing occurs during the months of May and June, usually the latter part of May or first of June. In the large flocks a shearer is provided for about every 100 sheep, but ordinarily, if the flock is small, the owner shears his own sheep, using much better care than is ordinarily given by the professional shearer in the range country. The usual practice is to provide a platform in the shed, and pens are constructed near at hand. As each sheep is caught its feet are cleaned and trimmed. It is then sheared and cleaned, the fleece is trimmed, and the long, dirty, and stained locks put in one sack, and the short, hairy tags in another. The main fleece is then neatly and securely tied and put in a shipping sack. The prudent flockmaster, of course, keeps a pair of scales near at hand and all extra heavy shearers are noted, and those sheep producing an inferior or light fleece are marked so that they may be put among the feeders or sold. If at time of shearing ticks are prevalent the sheep are dipped as soon as shorn. The wool is usually shipped at once to some manufacturer in the State or consigned to some dealer in Minneapolis, Chicago, or some Eastern market. The farmer who has only a few fleeces usually sells it to the local merchant, who, when he has secured sufficient quantity, sells it to the mill or consigns it to commission men. Where additional help is required during shearing the wages paid are about $2 per day. Many of the farmers store their wool in some dry place until they have opportunity to market it. All grades of wool are produced from fine to coarse, the bulk, however, is a medium. The fleeces range in weight from 5 to 10 pounds each, the average for the State being not much less than 7 pounds. The bulk of the wool is handled at Minneapolis, and only a limited number of individual consignments are made to

Chicago or Eastern markets from this State, unless reshipped from Minneapolis by the dealers. The farmers usually sell wethers and fat sheep to the local butchers or buyers, and the shipments are made in car lots, usually to St. Paul or Minneapolis markets, and sometimes to Chicago. The nearness of these markets to the Minnesota growers makes the net price received very close to the St. Paul quotations.

The farmer who has a lot of wool to sell prefers to sell it in bulk on its merits and for cash. Those who have consigned wool to distant markets, after considerable delay, receive returns with various grades reported which they do not understand, and sundry deductions in the bill of particulars which accompanies the returns. This method is never very satisfactory to the grower. Farmers who sell wool do not understand why the buyers and speculators do not carry wool as they do provisions and grain. Another difficulty encountered by the small sheep-owner is the fact that he does not have the opportunity to deal with the regular wool-buyers direct, as do the sheepmen in the States west, where it is a more exclusive business. As a consequence he has to dispose of his wool to the local merchant for whatever he is pleased to pay, in order to realize ready cash. If he ships to a distant market his consignment is so small and the time of returns so uncertain, and usually so unsatisfactory, that he does not care to make a second attempt. Thus, so far as the wool clip is concerned, the farmer feels that he is practically at the mercy of the man who purchases or handles his wool. Often the meager price received for the wool is made so by the farmer himself, as so many are indifferent in the preparation of the fleece for the market. Many of them permit the sheep during fall and winter to run to the straw stacks, and the fleece becomes filled with chaff, and the buyer docks the prices as a consequence of the bad condition of the wool.

The sheep disposed of each year consist mainly of three-year old wethers, although occasionally some lambs are sold. It is seldom that more than one-third of the flock is disposed of in one year, or a number exceeding the annual increase. The average live weight of sheep is not less than 100 pounds, and frequently more. Sheepmen say that if the present tendency to mutton continues it will not be long until the average weight of fat wethers will increase to an average of from 140 to 150 pounds.

The cost of handling sheep per year, all expenses, which include the care, cost of hay, grain, and salt, and interest on the pasture land, is variously estimated from 75 cents to $1.50 per head. A great many farmers seem to have no general idea of the exact cost, the majority saying that $1 or less per head will cover all expenses. The farmers are generally agreed that a flock of 50 or less in connection with general farming and mixed stock-raising costs them little or nothing; but when larger flocks are handled on exclusive pastures, the total cost usually amounts to one-half the price received for the fleece. Some accurate idea of the cost can be given from an estimate furnished the

writer by D. L. How, Shakopolis, Renville County, who gives the annual cost for 400 wethers and 8 bucks, as follows:

Interest and taxes on 160 acres of land fenced with four galvanized wires	$350
Interest and repairs on well 260 feet deep, windmill, and tank	50
Oats, straw, and salt	20
Grain and ground feed fed from February 1 to May 1	100
Expense and shipping after shearing	20
Cost of lumber in caring for sheep at 25 cents per head	100
Total cost for this flock	640

Or $1.60 per head.

The returns the sheep give to the farm are of course not considered in Mr. How's estimate.

Among the local disadvantages and obstacles encountered by sheep-raisers in Minnesota are wolves in the timber portions of the State and dogs everywhere. However, the ravages are perhaps less than in the other agricultural States. There is very little trouble from wolves, thanks to the judicious wolf-bounty law. In the prairie districts of the State the farmers receive about $11,000 every year in the way of bounties for exterminating them. The greatest loss from wolves is in the timber country. The sheepmen who live in the prairie counties say that a first-class dog law would be of great benefit to the sheep industry. As it is now every sheep-owner must be a law unto himself—with the aid of a trusty shotgun. Owing to the settlement of the country, it is necessary to have fences that will restrain the flocks inclosed in pastures which are owned by the sheepmen. The fences that will turn horses and cattle will not restrain sheep unless about double the expense is incurred. Another disadvantage is the long winter, which necessitates a protracted period of dry feed, such as grain and hay, adding to the expense of maintaining the flocks. However, the compensation of the increase in both the fleece and carcass will more than offset the extra period and cost of feeding.

The chief natural advantages for sheep husbandry in Minnesota as given by sheep-owners themselves are substantially as follows: Freedom from disease of all kinds; abundance of nutritious grasses and hay; cheap grain feed and abundance of wheat and oat straw, which is quite valuable for rough feed, and practically costs nothing; the nearness of Nebraska and Iowa cornfields; unusually good local markets; the abundance of good water and shade in almost every county; clover and timothy is easily grown; the winter ordinarily dry and cold; the climate healthful and invigorating, which makes it easy to produce robust sheep; root crops are easily produced and are excellent feed for sheep, to be used in connection with dry, coarse feed.

Little or no complaint is made by sheepmen regarding any diseases. The main difficulties encountered are the common ailments caused by neglect. Some seasons ticks are quite numerous, making it necessary for the sheep-owner to incur the expense of dipping the flock. Scab is

occasionally brought in by Western sheep, although in recent years very little trouble is being encountered from that parasite except by those bringing in Western sheep.

The loss of sheep in Minnesota is very light from all sources. The chief source of loss is dogs, since the wolf-bounty law has encouraged the destruction of wolves. Owing to the provisions made by most of the sheep-owners for winter the loss from exposure is trifling, and seldom exceeds from 1 to 2 per cent. The losses from dogs are variously reported at from 2 to 10 per cent, with perhaps an average of 5 per cent for the State.

The usual method of handling the flocks in summer is to let them run in pastures during the day and stay in the open sheds in yards at night where water and salt are accessible. During the cold weather of winter they are kept mainly in the yards and sheds where hay and straw are accessible at all times. During the winter, when the ground is not covered with snow, the sheep during the middle of the day are turned out to run in the fields, and the racks are then filled with hay and straw, and where closed sheds are used they are opened and ventilated.

To profitably conduct sheep husbandry, the skill of the sheep-owner must be exercised during the winter season. His sheds and yards must be adapted to the purposes for which they are used, in the matter of health, economy, and convenience. There is no branch of animal industry where vigilance will bring better returns than in the management of sheep. It must be remembered that sheep, of all animals, deserve civilized methods of management.

THE SHEEP-FEEDING INDUSTRY.

At the Union Stock Yards at South St. Paul 24,000 sheep were fed during the winter of 1891–'92; and at the Twin City Yards, near Minneapolis, 25,000. The results are highly satisfactory. The experimental stage of feeding sheep has demonstrated that it is a profitable enterprise, especially when feed is not high priced, or when aged wethers can be purchased at reasonable prices on the range in Montana, Utah, or the Dakotas. Wheat screenings and mill stuffs, which usually are abundant and reasonably cheap feed, are very superior for sheep. Sheep have been bought at the Chicago Stock Yards and shipped to the feeding establishments at St. Paul, and then returned to Chicago for sale, and yielded a handsome profit. The same parties are reported to have purchased 30,000 sheep in Texas to be brought to Minnesota and fattened during the present winter and made ready for the spring market. Other feeders are now contracting sheep in Montana, Utah, and Idaho for the same purpose. The sheep purchased are three and four years old wethers, usually grade Merinos, some of which show the Down blood.

The large feeders usually ship to Chicago, although to the extent of the demand the home market trade is equally as satisfactory.

This sheep-feeding business is a new feature of the industry in Min-

nesota that is of great importance, because it insures a profitable utilization of food products that are not especially demanded in the market except at low figures which would not realize the producer or seller but little, if any, margin or profit; besides, the more stock feeding that is done in the State the larger the saving of coarse feed which now is largely wasted. If it is possible to secure wethers there will be fed during the coming winter in Minnesota at least 200,000 sheep.

Several Minnesota sheep-owners have requested the author of this report to present the best plan of a sheep shed for 100 sheep. The matter was referred to the editor of the Farm, Stock, and Home, of Minneapolis, who has a department devoted to "Farm Plans and Appliances" in his paper. And in the issue of May 1, 1892, the following figure and description is given of a sheep shed suitable for accommodating a flock of 100 sheep:

Fig. 1 shows a section of a shed which will require but little outlay to build, where long posts or poles can be obtained. It is 24 feet wide, and for 100 sheep should be at least 32 feet long. The roof is one-third pitch and requires 16-foot boards for covering. The plates are 2 by 6, set edgewise, and let into the top of posts. Instead of a single ridge-pole two pieces of 2 by 6, are used, one let in on

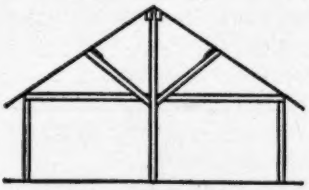


FIG. 1.—Shed for 100 sheep.

each side of the middle posts. Purlines and braces are also 2 by 6. The entire bill of lumber is as follows: Nineteen pieces, 2 by 7, 16 feet long; 16 pieces, 2 by 6, 12 feet long; 1,536 feet common boards, 16 feet long; 576 feet common boards, 12 feet long; 96 pieces batten, 16 feet long; 36 pieces batten, 12 feet long; 5 posts, 20 feet long; 10 posts, 12 feet long.

Battens are better than wide boards to cover the cracks in board roofs, for the reason that they allow the roof to dry out sooner after a rain, thus preventing decay.

By using longer posts an upper story for the storage of hay could be had under the same roof. Provision should be made for driving the manure wagon through the shed. Since the manure will need to be cleaned out but once or twice a year, the door, instead of being hung on rollers or hinges, should be bolted to the posts. In this way a tighter joint can be made than with rollers, and the doors will always be fastened instead of slamming in the wind.

Sheep sheds are often made narrow and with a single shed roof, similar to one-half of Fig. 1. Such a shed requires nearly as much lumber to build as Fig. 1, while but half the space is inclosed.

EXPERIENCE, VIEWS, AND TESTIMONY OF MINNESOTIANS.

John O. Hall, Alden, Freeborn County:

I think a small flock of not more than 50 coarse-wool sheep will pay a great deal more proportionately than a large flock. Our hay is mostly from wild grass and rather too coarse for sheep.

E. S. Holmes, Brownton, McLeod County:

I have kept sheep for seventeen years in this State and it has always paid me better than any other branch of the farm. I have kept the Merino for wool, but have changed my plan and am crossing them with the Shropshire, with a view of raising both mutton and wool, for with the low price of wool and good price of mutton I think it will pay better.

T. P. Grant, Luverne, Rock County:

I have kept sheep for eleven years in this country. Was among the first to bring sheep to this county. Have about 500 acres of land under cultivation. Invested about $600 in sheep in 1881, and about the same amount in brood mares, also like amount in cows and hogs. Have made more out of sheep in the eleven years than out of all the balance of my stock. Our dog law needs amending.

William Hysop, Chester, Olmsted County:

Have kept sheep for twenty years and find them the most profitable stock on the farm. As wool keeps declining I intend to raise larger sheep and depend more on mutton than wool. While the long winters here are a drawback, it is largely offset by the good health of sheep.

B. M. Owen, Dodge Center, Dodge County:

My impression is that sheep-raising here is rather on the increase, owing mostly to better prices for mutton, together with the benefits sheep are to the farm, for a sheep never stepped on a piece of land but it left it in better condition than before. No weed that has the least oil in it escapes the sheep. When one year old a sheep makes a payment on his cost. A mutton ewe at eleven months old may, and does, produce a lamb, and if well kept will raise it. A Merino ewe may produce a lamb at two years, but should be three years old before she breeds.

Alexander Harkins, West Newton, Nicollet County:

For over thirty years I have kept sheep on this farm. My flock has ranged from 150 to 400, and I have always found them the most profitable part of the farm. Have known of no special disease during this time, and loss by all diseases has not been one-fourth of 1 per cent. Accidents, dogs, and wolves have taken a few, mostly by dogs. I find more inquiring after sheep this season than ever before. Farmers are turning their attention in this direction. Just now sheep husbandry is greatly on the increase. A better class of sheep is being called for than formerly, which looks well for the future of the industry in this State.

F. W. Carlton, Warren, Marshall County:

I have a fine place for sheep, a 500-barrel flowing well, and plenty of pasture. I expect to stock again with a better class of sheep as soon as I can get rid of more cattle. But out on this flat prairie, where almost every foot of land can be cultivated, is no place for sheep. Water is too scarce, especially in a dry season, and flowing wells can only be secured in a few places.

Thomas Powle, Jackson, Jackson County:

Have had twenty years' experience with sheep in Devonshire, England, and twelve years in Minnesota. Find they require less care than any other kind of stock and are easier controlled, and are more profitable. But sheep must have proper care and attendance at the right time. Here is where men not understanding the business fail. I commenced here with a few native sheep, bought the best Oxford Down ram lamb (at our State fair), bred and inbred with him as long as I could increase the fleece, which I did from 5 to 8 pounds average, and carcass from 100 to 140 pounds.

I then bought another lamb, equally good, and bred him to 113 ewes, and expect to still increase both wool and carcass. I always get more twins and triplets than single lambs.

W. M. Corbit, Rose Creek, Mower County:

Have kept sheep for fifteen years, and for the last ten years have kept from 400 to 700 on my farm. Received the highest price this winter for mutton. Usually sell by the carload in winter all surplus sheep, and shear from 400 to 500 every spring. Generally get from 18 cents to 20 cents per pound for unwashed wool, which averages me about $1.40 per head. Received 21 cents per pound net for last year's clip. There will be an increase in sheep in Minnesota, but we can not compete with the South and West.

David Haggard, Crookston, Polk County:

A few farmers who have tried sheep-raising and have used any of the imported breeds are more than convinced that this branch of farming will be a great success, as one farmer, who keeps about 150 sheep, claims that the increase in weight of fleece will average 1½ pounds per sheep above what they would yield when brought here from Ohio. As regards the raising of roots, I believe that in no place can it be done easier or with more sureness than has always been the case here, although some seasons are better than others for this, depending in a great measure upon the amount of moisture we have; but the work of caring for them when growing is comparatively easy indeed. Potatoes, carrots, parsnips, rutabagas, beets, and all the garden vegetables are very easy of cultivation and yield most prolifically.

J. Fullerton writes the Northwestern Agriculturist, from northern Minnesota, as follows:

Since 1873 I have kept sheep in this Northwest, and never had a shed with more than three sides tight. I like one 100 feet long, 30 feet wide, with a feed rack 3 feet wide the whole length of it in the center. In snowy weather we feed in this rack. After driving the sheep out of the shed the hay is filled in and tramped from end to end to keep them from driving their heads into it, and so getting seeds into the neck. We always build our hay on top of the sheds for convenience. As soon as the rack is filled the gate is opened and they are enjoying their meal (after the sheep have been carefully shut in, no dirt or seeds must fall on them). We have never fed anything but prairie hay and unthreshed oats, and these are spread in long windrows about 10 feet apart. Oat straw, before it goes through the thresher, is fine feed. For threshed grain and bran, wooden troughs could be placed inside the long rack in the shed.

James McMillan & Co., Minneapolis:

The bright side of the sheep business is the steady demand and good prices for fat sheep most of the year. Wethers from Montana and the Territories, averaging from 100 to 150 pounds live weight, are commanding from $5 to $5.50 per hundredweight; lambs in proportion. This is more than double the average price of fat cattle. We understand the total number of sheep in this county is increasing very rapidly. Double the number of all varieties should be kept, as, unlike continuous grain-raising, they keep the farms from running out.

D. L. How, Shakopee, Scott County:

I commenced, in 1880, with 75 ewes in this county (timbered); had all conveniences. First year lost 32 by wolves, next year 18. Removed them to Renville County. Erected barns 20 by 80. Have now two barns 20 by 80. Intend to make one 40 by 40, and one 20 by 100. No floors; height, 8½; shingle roof, one-third pitch, ventilated by chimneys and sliding ventilators on side and above head. We use timothy until

December 15, feeding heavier than that during January and February, and from March to May 15 as heavy feeding as in November and December. We have no disease; no trouble in any manner. Yearly have as many lambs as ever. Sell all wethers and ewes of two years old; none kept longer. Every year, about September 1 and May 1, shear. If warm, market wool at once. My sheep have gone over 8 pounds per head, but call it 8 on average. Have now about 19 cents per pound average. We have two yards; flock divided can enter barn from each yard. My sales last year amounted to $1,404 for wool and sheep. In my opinion a farmer who gives careful attention to sheep, doing everything in time, can, upon our prairie land, depend upon getting twice as much as it will take to take care of the sheep. My meadows are in 160-acre lots, and the greater part of the land is in grain. This experience of mine is one of the common kind; no attempt at any experimental work.

IOWA

The census report of 1890 shows the population of Iowa to be 1,911,896, a gain of 287,281 over that of 1880. Its area is 55,045 square miles, or 35,228,800 acres. Nearly the whole State consists of gently undulating prairie, and it is destitute of mountains, or even hills of any considerable size, except adjoining the rivers and in the northeastern part, where the scenery is more diversified. The country is well watered and extremely beautiful. The climate is moderate, and malarial and epidemic diseases very rare.

If Iowa does not stand at the head of the list of States and Territories in the West in the numbers of her sheep, she leads them all in average value. A careful canvass shows that there are sheep on the assessor's roll from every county in the State, indicating that the business is pretty generally distributed. Another very encouraging feature of the business is the very large number of small flock-owners throughout the State, and the very general healthy condition of their flocks. Sheep scab and foot-rot are very rare. Occasionally they are brought in by outside shipments. This healthy condition may be attributed in part to the great number of small flocks and the usually dry rolling land. The Merino sheepmen claim that Iowa's success in having so many good healthy sheep may be attributed to the fact that the first sheep introduced in the State were Merinos, and that on them were used the coarse-wooled and medium-wooled bucks as a foundation for a majority of the best sheep in the State. These claims are conceded by impartial judges. Without any intention of favoring any particular breed of sheep, believing that all of the improved breeds are good and have their special places, the following facts, taken from good authority, will be found practically correct and of interest:

Practice shows the weight of the average fleece from the Cotswold, Lincoln, and Leicester sheep to be 12 to 13 pounds; the Shropshire, Hampshire, and Oxford, 9 pounds; the Southdowns, 5 pounds, and the Merino 11 pounds. The market prices of the wool from these sheep are as follows: The Cotswold, Lincoln, and Leicester bring from 20 to 22 cents per pound; the Shropshire, Oxford, and Hampshire, 23 to 24 cents; the Southdown, 27 cents, and the Merino 18 cents per pound. From this the value per head for wool may be estimated as follows: The long wools would bring $2.50 per fleece; the middle wools, $2.12; the Southdown, $1.35, and the Merino $2.

As a usual thing the heaviest losses sustained by the Iowa flockmaster are from the ravages of dogs and wolves. The loss from disease is small. Grub in the head does not enter very largely in the losses, but one of the most annoying things to the shepherd is to find that the ewe will not own or care for her lamb. Occasionally lambs are lost at from four to five months old by the tapeworm. Often the season is unfavorable about lambing time, being cold and rainy, and those who have not proper protection lose many lambs. It is safe to attribute the majority of losses of both lambs and sheep to the ignorance, carelessness, indifference, and inexperience of many in the business and the employing of incompetent help. The thoughtful and successful flockmaster has learned how to avoid these losses.

It is a notable fact that diversified sheep husbandry is an unqualified success throughout the State. There are no flockmasters west of the Mississippi River who seem to appreciate the value of sheep more or give them better attention, both as to proper care and management, than do the majority of sheepmen of this State. They have clearly demonstrated that all of the recognized breeds of sheep do well, and are a profitable class of stock to handle either in a small way by the general farmer or as a more exclusive business by the breeders.

Investigation shows that Iowa has more pure-bred flocks of the different breeds of sheep than any other of the Western States. This meritorious exhibit is highly creditable for the State, and bespeaks a glorious outlook for the permanency and future of the industry.

Sioux City is the leading live-stock commercial city of the State. The fifth annual report of the Union Stock Yards of this city shows that the receipts of live stock in 1890 were: Cattle, 167,010; hogs, 723,914; sheep, 26,669; horses and mules, 1,636. In 1891: Cattle, 150,912; hogs, 397,247; sheep, 22,399; horses and mules, 2,853. The packing-house interests here are more extensive than those of any other point in the State. The Sioux City Sheep Company has recently been organized, and they handle sheep of every description, buy or sell for feeding or for breeding purposes. H. P. Chesley, the general manager of the Stock Yards Company, says:

> The slaughtering of sheep for shipment is a comparatively new industry with our people, as it was commenced in the latter part of November last year, since which time 20,000 sheep have been killed and shipped to various eastern points.

GENERAL FACTS ABOUT THE INDUSTRY.

A careful investigation shows that on June 1, 1892, there were 565,675 head of sheep in the State, not including the crop of spring lambs, which could safely be estimated at 250,000 head. In addition to the above, there are a large number of western range sheep fed each winter in Iowa. These are started from the western range for the Chicago market, but stop in transit to feed for two or three months. These range sheep have been enumerated in the State or Territory from which they came, so

that about all the benefit Iowa gets from them is the sale of what grain and feed they consume.

From the best obtainable sources it is ascertained that the number of western range sheep fed in Iowa during the winters of 1891 and 1892 numbered 125,000 head. Iowa stands third in the list of States feeding range sheep, Nebraska being first and Kansas second. From figures compiled by the United States Bureau of Statistics we find that in 1860 Iowa had 259,041 sheep; in 1870, 855,359; in 1880, 455,359; and in 1890, 475,816. From this we see that the State had many more sheep in 1870 than it had before or has had since that time. The probable reason for this state of affairs is that during the period between 1865 and 1875 many large flocks were ranged in portions of Iowa not occupied by actual settlers. This land has since been taken up and is now used for agricultural purposes, leaving but few tracts open for free range. Large flocks have disappeared, the business has settled down to a permanent basis, and the sheep are now largely owned by farmers in flocks numbering from 50 to 200 head. The great majority of sheep in the State to-day are either pure bred or good grades. The breeds are Merinos, Shropshires, Southdowns, Cotswolds, Oxfords, Leicesters, and Lincolns. With the majority of flockmasters the production of mutton is more of an object than the amount or quality of wool produced, hence more attention is given to the size and early maturing qualities of mutton breeds. Those who keep pure-bred flocks, and there are many in Iowa, sell their surplus stock for breeding purposes, getting prices ranging from $25 to $50 per head. Many choice animals bring much higher prices, while a large number bring less than $25. The State Auditor's Report for 1890 gives the average assessed valuation of sheep at $1.18, while Statistician Dodge, of the United States Department of Agriculture, gives the average value at $3.42, by far the highest valuation of sheep in any of the States and Territories west of the Mississippi River. If we take an actual average of the selling prices of the sheep of the entire State, including pure-bred, grades, muttons, and all, it would represent an actual average value varying from $4 to $10 per head, and place the industry, including the lamb and wool crops, at not less than $5,000,000, to say nothing of other property pertaining to the industry.

The increased fertility given to the soil where sheep are kept we find well illustrated in the counties of Van Buren and Mahaska, which are among the oldest and first settled counties in the State, and through both of which the Des Moines River flows. In these two counties most of the land is very rolling. Much of it had been farmed for years, and its productiveness greatly injured. A great change for the better was inaugurated about ten years ago, when less tillage was done and the land used principally for grazing sheep and other live stock. What is the result? To-day Van Buren County has more sheep than any other county in the State, Mahaska County stands next in numbers, and the

land in both counties has nearly doubled in value, is more fertile than ever, and is covered with a luxuriant growth of blue grass. Intelligent farmers will tell you that this transformation is owing to the large number of sheep now kept.

We find the majority of the sheep of Iowa in the southeastern part of the State and east of the central. As stated above, Van Buren County heads the list with 43,295 head. Mahaska comes next with very nearly 25,000, then follows Bremer with 17,529, while Jefferson, Davis, Henry, and Lee have each about 15,000. Then come Marion and Wapello with 12,000 each, while Johnson, Decatur, Fayette, and Monroe have 10,000 head each. In the assessor's returns sheep in Sioux County are valued at 50 cents per head, the lowest of any county in the State, while Davis County values her sheep at $2.33, the highest value of any in the State.

With the growing demand for mutton in the United States and the natural advantages possessed by Iowa for sheep husbandry, in the way of rich pastures and cheap feed, together with the large numbers of well-bred sheep, the outlook for the industry in this State is very encouraging indeed. The farmers are beginning to better appreciate the importance and profit of keeping small flocks of good sheep, and each year they are increasing their numbers. Every year more of the large mutton breeds are imported from England, and the flocks generally throughout the State are being bred up and improved. The common sheep are mostly Merino grades crossed by Shropshire or Southdown rams, or the long-wooled breeds.

There are more than ten times as many hogs in Iowa as there are sheep, and it is said that one hog will consume as much feed in a year as ten sheep will; besides he is more liable to die of cholera than the sheep of other diseases.

The number of sheep in Iowa has increased 18 per cent during the last two years, and the value per head has increased 22 per cent during the same period. During the same period the cattle values have declined 1 per cent, hogs 1½ per cent, and horses 9 per cent. Iowa sheep have increased in value more rapidly since the reviving of the sheep industry in the United States than that of any other State in the Union. In value per head this State outranks those of Vermont and Ohio, the former the cradle of the Merino breed in this country.

Sufficient importance is not given by most farmers to the age or breeding of rams to be used on the flocks. Some use a ram before he is quite a year old, a few a common scrub sire, yet these are not in the majority, nor are they as a rule successful shepherds. At the head of a majority of the flocks is found an imported or American-bred registered ram, 1 year old or past. The usual time for breeding is in November, or from the middle of October to the middle of December, and one ram is permitted to serve from 40 to 50 ewes; yet, if he does not run with the flock, and is allowed but one service, one ram is sufficient

for 75 or 100 ewes. In many small flocks he is allowed to run with the flock from the 25th of October until the next spring. As there is a growing demand for early spring lambs for mutton, some flockmasters, who have good warm quarters breed for early lambs, but the majority breed to have the lambs come when the grass will do to graze and the ewe will give milk enough to make the lamb develop rapidly. When properly managed the per cent of ewes that fail to breed is very low, the average for the State not being more than 3 per cent.

The per cent of lambs raised, owing to the large number of twins, will not vary far from 95 per cent. Many report 100 per cent of lambs raised, while others go as high as 125 per cent. While the majority of farmers keep sheep for both mutton and wool, the mutton is the largest source of revenue, lambs second, and wool third. The time has come when Iowa farmers should know that sheep as weed exterminators, or scavengers and distributors of fertilizers for renewing the soil on worn-out lands, will pay aside from the other three sources of revenue.

The usual time for shearing is from May 20 to June 10. Many shear as early as April, but this is dangerous if the weather is unfavorable, unless warm and comfortable quarters are provided. The majority of farmers do their own shearing, using a platform or bench for the sheep to rest upon; others stretch a canvass over a layer of straw. In some parts of the country professional shearers go around and shear sheep at from 6 to 7 cents per head. The fleeces are carefully tied up, sacked, and sold either to a local wool merchant or local factory, and in a few instances shipped to Chicago, Philadelphia, or Boston. The weight of the fleeces vary from 6 to 17 pounds; the general average is from 7 to 8 pounds. The Iowa wool is mostly graded medium, or fine medium. A small portion of the annual clip is worked up by factories in Iowa and adjoining States, while the great bulk of it is shipped to Chicago and eastern markets.

Iowa lays no great claims to her mutton sheep that hitherto have been sold. The home demand is good. The best muttons have not been on the markets to any great extent, because most of the best sheep are retained for breeders, and only the common wethers are sold off each year. There is a wide range in the weight of mutton sheep. Common animals weigh from 95 to 140 pounds. But few large muttons are sold, as most of the males are saved for stock rams and the females for breeders.

The entire cost of keep, feed, etc., for a sheep a year varies from 75 cents to $1.25 for the common kind, and $2 to $4 for full-bloods. The cost is generally measured by the experience of the flockmaster, his conveniences for handling sheep, the kind of care given, and the amount and kind of grain and other feed provided, and the value of the land on which they are kept.

While the methods of feeding vary with different flockmasters in different parts of the State, the usual custom is to feed during winter

a little grain, corn or oats, or both mixed in equal parts, once and sometimes twice a day, to the stock sheep. Corn is the principal food used to fatten for the mutton market, but to the breeding ewe very little or no corn is fed. Oats and bran are considered the best grain food for her. One ear of corn per day during the winter season is usually considered sufficient grain for stock sheep. For roughness corn fodder is largely fed, but many flockmasters prefer tame hay, timothy, and clover, and most of them have plenty of it; but quite a number in the State use wild hay, principally blue-stem, and are very well satisfied with it, as it is usually cleaner and not so dusty as tamé hay, and has less chaff and seed to get into the wool. A good portion of the winter the sheep can be fed on the pasture or herded in the cornstalk fields. It is very evident that they will take a variety of food, and be satisfied with almost any kind so it is clean and not moldy. Since they are so easily satisfied and require so little feed, that which they receive should be good. Roots as food for sheep do not seem to be properly appreciated by American breeders, although no other country can produce more abundantly or cheaply beets, rutabagas, turnips, and cabbage than ours. It is by the liberal use of roots that England is enabled to produce such grand sheep that American breeders and importers are willing to pay the highest prices for. It will pay Iowa flockmasters well to visit their great State fair and see the trained and experienced shepherds feed the large number of excellent show sheep exhibited there each year.

For the summer pasturing of sheep a great portion of Iowa is unsurpassed by any State in the Union. There are dry rolling lands that produce an abundance of blue grass and white clover for early feed in the spring; then the late meadows come in for change, followed by the fine cornstalk fields, all of which furnish a variety of feed for the flocks for at least ten months of the year. While Iowa lays no claim to competition with breeders on the great western free range in producing sheep in large numbers cheaply, no State can excel her in producing the most valuable mutton and wool sheep. She has more farmers breeding small flocks of from 50 to 200 head of pure-bred and high-grade sheep of the different breeds than any other of the western farming States, so that she does not boast of numbers, but of the value and quality of her sheep.

Iowa flockmasters generally have yet to learn the advantages of being associated for the help of each other. In an association they can more readily secure favorable legislation, protect their common interests, and more easily and profitably dispose of their products by finding out the best houses handling wool or muttons. In this way they can cut out the dishonest dealers, give more trade to the honest ones, and thus secure a less commission; in fact, make their State association a veritable bureau of information.

Iowa already has what is known as the State Sheep-Breeders and Wool-Growers' Association, with a good working membership composed

of some of the most intelligent, progressive, and successful sheepmen of the State. At its annual meeting in Waterloo last December, the following officers were elected for the ensuing year: President, C. L. Gabrilson, New Hampton; secretary and treasurer, Prof. C. F. Curtiss, Ames; vice-presidents, C. E. Hartley, Monroe; Joseph Edgerton, Nassau, and Robert Thomas, New Sharon; legislative committee, George W. Franklin, Atlantic; C. E. Hartley, Monroe, and Robert Thomas, New Sharon. Besides discussing many questions of interest to flock-masters at this meeting they passed the following resolutions:

First. That we demand of the next legislature a more stringent and efficient law relative to the depredations of dogs, with a view to lessening their number and diminishing said depredations and enabling the owners of live stock suffering losses from dogs to be more fully reimbursed.

Second. That we demand a liberal State bounty for wolf scalps, with a view to the speedy extermination of wolves in Iowa, and that we appoint a committee to press these our demands upon the legislature.

Third. That we ask the Iowa Improved Stock-Breeders' Association to appoint a committee to coöperate with us in urging these claims upon the legislature.

Fourth. In order that we may obtain information as to the honesty, efficiency, and financial soundness of the wool commission houses, we request the members of this association to report to the secretary their future sales of wool, the commission house consigned to, or the firm sold to, the grade and condition of the wool sold, and the price or prices received, and whether the transactions are satisfactory, that the secretary may report to members of the association.

It was argued in support of the last resolution that wool-growers did not always have an opportunity to sell their wool at home just when they desired to do so, and were often reluctant about sending to a commission house for fear of unsatisfactory results. It was said that wool commission men were no worse and perhaps no better than commission men in other lines. Some are honest and efficient and some the reverse, and the object is to find out the good houses, patronize them and let the others alone. Some commission houses are not sufficiently careful to make the best possible returns for a few hundred or a few thousand pounds of wool, as there is no continuous trade to be courted. The farmer may never be heard from again, and there is a temptation sometimes to take a small slice while he can. The action contemplated by the resolution would not only give the wool-growers information as to whom they may trust, but would put them on something of the same footing as large shippers, since unfair dealing toward one member might result in the loss of shipments from all.

A bill was before the Iowa legislature last winter providing for the appointment of sheep inspectors by the county supervisors, in any county in the State when notified in writing by five or more sheep-owners of such county that sheep diseased with scab or any other malignant contagious disease exists in said county. This county sheep inspector shall look after these diseases, or cause the owners or agents to do so.

Owing to the urgent request of leading sheep-owners, Senator Vale,

of Van Buren County, introduced a bill relating to bounties on wolves, etc., which is as follows:

SECTION 1. Sections 1487 and 1488 of the code are hereby repealed, and the following enacted in lieu thereof: "A bounty shall be allowed on the skin of a wolf, lynx, swift, or wildcat as follows: Five dollars on an adult wolf, and two dollars on a cub wolf, and one dollar on a lynx, swift, or wildcat, to be paid out of the treasury of the county in which the animal was taken, upon a certified statement of the facts, together with such other evidence as the board of supervisors may demand showing the claimant to be entitled thereto. Any person who shall demand a bounty on any of the above mentioned animals killed or taken in another State or county, or on a domesticated animal, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not more than one hundred nor less than fifty dollars and costs, and be imprisoned in the county jail till said fine and costs are paid.

"SEC. 2. The person claiming the bounty shall produce such statement, together with the whole skin of the animal, to the county auditor wherein the said wolf, lynx, swift, or wildcat had been taken and killed, and the auditor before whom such skins are produced shall destroy or deface the same, so as to prevent their use to obtain for the second time the bounty herein provided."

In explanation of the manifest increase of wolves in the State, the Homestead, of Des Moines, says:

There are a lot of farmers scattered up and down the prairie streams who are engaged in wolf farming. There is less cash outlay and more clear income in wolf farming than any other kind of farming we are acquainted with. The ranchman feeds his stock on the Government lands free of charge, the wolf farmer allows the wolf free range among his neighbor's sheep, chickens, and pigs. He harvests his crop each spring in the shape of a litter of cubs whose scalps he takes with the greatest regularity to the county seat and draws the bounty. If the adjoining county pays more bounty than the one he is in, it is no difficult matter to take them across a county line and kill them so as to make them citizens of that county, duly taken as provided by law. Under these conditions wolves are increasing in Iowa, and, we do not doubt, in other prairie States where similar inducements are held out to wolf farming. The complaint is made constantly that there are not enough sheep in the West. One of the main reasons is because there is no efficient method of exterminating one of the greatest enemies of the sheep—the wild dog or wolf. The evil can be abated only by State action. Farmers pay the most of the taxes in the State of Iowa, and all the Western States for that matter, and they are entitled to some protection from one of the most important and profitable industries in the West.

Relating to this same subject, A. J. Blakely, of Grinnell, Iowa, a prominent breeder of Merinos, says:

The wolf, not merely figuratively, is at the door of many an Iowa farmer, but the real wolves, large wolves, prowl over the Iowa farms in increasing numbers, seeking what they may devour. No census like that of their cousins, the dogs, has ever been made. Like the flea, when you put your hand on them they are not there. But their name is legion. Much of the best sheep lands of the State, the bluffy, bushy portions along the streams and adjacent to timber belts, can not be pastured with sheep. The sprouts from the cut off timber and the hazel brush can now be exterminated only by the grubbing ax and the brush hook, and at large expense. If sheep could be kept on these lands how quickly would the young sprouts vanish and the roots decay, and their places be taken by the rich blue grass, preparatory, a few years later, to easy plowing and large corn crops. Not merely would the owners of these rough, bushy lands be benefited, but their reclamation and settlement would bless the neighboring schools and the neighboring towns, and in fact the

taxpayers of the whole State. Sheep can't live there now on account of the wolves. Pigs can't be raised there on account of the wolves, and chickens and turkeys must every night roost very high, as though Thanksgiving day were to follow. Really it is a stain, a foul stigma, on the civilization and the enterprise of the people of Iowa that these wolves remain and are frequently seen crossing the best cultivated farms, and even near the best towns in our State.

What is the remedy, do you ask? Wipe out all trifling and unequal bounties and induce the legislature to provide a State bounty of $20 for the scalps of the old wolves and $5 for the young ones. The boys will then arm themselves with the best rifles of long range, will watch and hunt for the game, and speedily exterminate the lupine race.

Regarding the best methods of management of sheep in the State, C. L. Gabrilson, of New Hampton, president of the Iowa Wool-growers' Association, in an address, covered the essential points substantially as follows:

The care of sheep is similar, since all breeds have the same characteristics regarding likes and dislikes; quality of wool, fecundity, and habit of growth are results of the breeder's skill in selecting, coupling, and feeding. The truth is, although as sheepmen we are enthusiastic over our flocks, our neighbors, while admitting the utility of an animal whose hoof is golden, are exceedingly slow to introduce it on their farms; and while the dog nuisance is sometimes given as a reason for not entering this industry, "I'm not fixed for sheep," is almost the stereotyped answer when this matter is discussed. Now, we can sympathize with such, for we were in the same fix, and found that, like Horace Greeley's plan for the resumption of specie payments, "The way to resume is to resume!" So in getting ready to keep sheep, the way is *to keep sheep*, and then you must provide the means for their care.

Sheep are more easily fenced against than hogs, because they do not root; but a bunch of sheep is an unhappy flock if ill fed. Five or six barbed wires, the bottom two 4 inches apart, the next one 5 inches above, the next 8 inches, and top wire about 3 feet from the ground, will keep sheep and lambs confined. Then, too, the well-fed animal is seldom breachy, except from habits learned under other conditions.

Sheep digest their food more thoroughly than most farm stock, and therefore require less grain or hay to produce satisfactory results. There are not many experiments on record of sheep feeding. The latest which has been given out comes from Madison, Wis., and there the lambs outgained pigs in growth and economy of food, which is a wonderful fact, when we take into account the well-known appetite and quick digestion of a growing pig. But the advantage in favor of sheep above other animals is its continued and complete digestive power through life as compared with swine and cattle after maturity.

Sheep suffer from wet more proportionately than cattle, because their fleeces hold the surplus rain water which otherwise runs off the short haired cow or steer. This water must all be evaporated, and most of this is done by animal heat that is drawn from the body; which, in turn, must be replaced from stored flesh and food eaten. In this respect the fine-wooled sheep, with abundance of oil in their fleeces, have the advantage of the more open-wooled mutton sheep, but shelter against rain is readily provided, and they are easily trained to go under cover when rain begins to fall.

It is the early lamb, like the early calf, which is most satisfactory when raised. Ewes about to lamb must have warmer quarters than store sheep require; but the lambs, like the calf, will endure cold after it has dried off and gets enough to eat. We have had considerable loss of lambs during the past two years when ewes have lambed about the time grass is starting and they have had access to it. Our lambs born when on dry food have got through all right, but a discouraging mortality of the innocents took place among those born when the ewes would spend their time

nibbling at the starting grass. Hereafter we shall keep the flock off the fields until the grass has a fair start—just as we find it best to do with cattle. A sheep is a helpless thing when once attacked by disease, and a new-born lamb is still more so.

The water question, as applied to sheep in winter, is a puzzling one. Why they should prefer to eat snow in winter to drinking clean cold water is more than one fellow can find out. Sheep are not great drinkers under any circumstances, and are very fastidious about drinking—a sip now and a sip then seems to please them best. To accommodate them in this habit and to avoid snow eating we have conducted water to the sheep barn, so that a running stream can be made to flow through it.

The editor of the Iowa Homestead, in discussing the subject as to who should keep mutton sheep, says that it is not the farmer who has an unlimited amount of brush pasture and who regards sheep merely as a brush browser and weed trimmer, able to live eight or ten thick, on an acre of land worth $10.

Let him beware of the mutton sheep. We do not advise him to keep any kind of sheep, but if he does let him avoid the Shropshire or Oxford, and give the Cotswold and Hampshire Down a very wide berth. The man who starts out to grow mutton must understand first of all the lesson so hard for men to learn, that something never comes for nothing, that "men do not gather grapes from thorns nor figs from thistles." If large size is to be obtained there must be first a breed with an inheritance of size and of wool that belongs to large mutton sheep, and second, feed and keep corresponding to that size of type and of wool. If a farmer will not buy rams of mutton size and mutton wool it is folly for him to expect mutton lambs, mutton prices, and mutton profits. There must be mutton keep, corresponding to the size and corresponding to the environment which first produced the size. There is no magic or legerdemain in sheep breeding or in any other kind of stock breeding, and the sooner farmers understand it the better. The man, therefore, who should keep mutton sheep is not the mutton-headed farmer, but the man with a clear head, who thoroughly understands that mutton is not grown on scrub-brush farms, nor from sheep springing from scavenger sheep, but on the richest pastures and from mutton sheep. We do not know how we can put this subject any plainer. This is not the day of miracles. The breeding of mutton sheep is not a game of cards, where men hope to get something for nothing, nor yet a sort of bucolic bucking the tiger on Change, but a legitimate business, where the beast is grown only from the best stock and by the best feed and care.

PERSONAL EXPERIENCE AND OBSERVATIONS.

A true index of the sheep industry of Iowa would not be complete without an expression from the men actually engaged in it, who know the difficulties they have to encounter and what is necessary to add to the further success of the business of mutton and wool production, so that both national and State legislatures may know the actual needs and how to apply the remedy to the benefit of all concerned. These experiences are especially valuable to the inexperienced flock master, coming, as they do, from successful and practical men.

W. J. Thompson, Jamaica, Guthrie County:

Have found sheep raising more profitable than any other branch of farming. I have made a yearly average of almost 100 per cent on money invested. Two years ago there was hardly a sheep in this county, but now nearly all of our successful farmers are turning to them; but they want sheep for mutton and wool.

W. A. Day, Blakesburg, Wapello County:

For the past eight years I have had nothing but pure-bred or imported sheep of the Shropshire breed, and I have been successful in making more money out of them than on any other kind of stock I keep on the farm. The sheep industry is gaining ground all the time, and good ones are most sought after. The result will be—added wealth and prosperity to our State.

A. B. Phelps, Competine, Wapello County:

I get far more profit out of my sheep than I do out of cattle, hogs, or horses, and I handle all kinds. The future outlook is very encouraging, for there are so many small flocks starting, all of a good quality. Iowa is bound to keep in the lead in the value of her sheep.

Henry E. Brown, Grinnell, Poweshiek County:

The most profitable sheep for us are the coarse-wool mutton breeds, as we can sell our lambs at from six to seven months old, weighing from 80 to 100 pounds. The sheep interests are improving now, and mutton always commands a good price.

W. O. Fritchman, Muscatine, Muscatine County:

My experience with sheep is that they pay better than any other class of livestock, as they can be handled with less labor and capital, and when properly cared for are less liable to diseases than other live stock, and as farmers are beginning to find this out they are taking better care of their sheep. This industry is improving, and the outlook is very encouraging.

H. G. Lillard, Weldon, Decatur County:

I first bought 150 lambs when prices were low, paying $1.60 per head. The next spring the wool paid for them, and later I was offered $3 per head for my sheep. People are paying more attention to mutton sheep than in former years. Some of the local disadvantages to the business are high-priced lands and too much mud in the spring.

Ben. Richardson, Spring Valley, Decatur County:

I have made more money raising sheep than at any other business, and yet I do not believe nor practice housing them, except when it is storming. Never permit my ewes to have but one service, that date is registered, the ewe marked, lettered or numbered, and separated from the flock for forty-eight hours. The local disadvantages to the industry are dogs, wolves, and a lack of Eastern competition in wool buyers.

J. H. McKibben, Albion, Marshall County:

For the past eighteen years my sheep have made me two dollars where other stock has made me one. Nor is that all; sheep are much nicer to handle than other stock, besides they enrich the land as no other stock will. The industry is improving all the time, and when farmers generally find out that the sheep is the animal that wears the "golden hoof," there will be five to keep them where now there is one.

Geo. W. Franklin, Atlantic, Cass County:

My first flock of sheep, fifteen years ago, were scrubs, shearing five pounds, but now I have pure-bred Cotswolds whose fleeces average 12.2 pounds. With Iowa's many natural advantages to the flockmaster, her dry climate, dry soil, rolling land, abundance of grass, and pure water, this industry, though in its infancy, if properly encouraged, will demand a large share of attention now paid to swine and cattle.

Jas. Edgerton, Nassau, Keokuk County:

My first ten-years' experience as a flockmaster was had in Ohio; and twenty-five years ago, when I began in Iowa, we had plenty of free range and I kept from 1,000 to 1,500 head, but since we have been restricted to our own land I winter from five to six hundred, all that I can well accommodate in barns. When the weather is suitable my sheep run on cornstalks and grass land, but get penned or stabled at nights, winter or summer.

A. J. Jewell, Oskaloosa, Mahaska, County:

I have about 400 sheep now, and have been handling them continually for thirty years. My sheep run out all winter, yet they can go in the barn or shed if they choose. I feed about one bushel of corn per day to 100 sheep. We have no outside range now, hence must reduce the size of our flocks. The interest in sheep husbandry is good and growing better.

F. F. Warner, Bloomfield, Davis County:

I have cared for sheep for the past thirty years and am well satisfied with the business. I have never tried to keep very many, but have been careful about feeding in winter, also selecting the bucks I breed from. Of late years there has been a great improvement in the way of keeping sheep, both in feeding and breeding. If prices for mutton hold out the business will continue to improve.

Channing Welch, Ayrshire, Palo Alto County:

Had sheep in northwestern Iowa for eleven years, and find them very healthy and profitable in small flocks. They pay about $3 per head per year in increase and wool, requiring but little care and labor in comparison with their returns. The demand for breeding ewes is large, and more farmers are becoming interested in them. Our falls and winters are dry, and contagious diseases are almost unknown. We feed liberally with prairie hay, which is thrown on the ground; so also is the grain feed in many instances.

E. Osburn, Van Buren, Jackson County:

I am not in the sheep business very extensively, but keep from 150 to 170 Shropshires, full-bloods and grades. Every year I feed a carload of lambs, which I ship to Chicago about March, and receive from $6.50 to $7.30 per hundred. While the present prospects are encouraging, sheepmen in this State would be pleased to have some legislation done in their interests in the way of offering a liberal bounty for the destruction of both dogs and wolves.

W. C. Nichols and Son, Ceresco, Howard County:

We have handled sheep more or less for the past twenty years, the common sheep first, then began crossing with Shropshire bucks thirteen years ago. We liked this cross so well that we invested in five registered ewes of this breed. After this we began importing from England, until now we have about 500 head, all registered. Last season we sold to breeders, farmers, and ranchmen two hundred head at from $25 to $200 a piece. Our sales have extended from Vermont to California. The average weight of fleeces from our flock is 13¼ pounds.

S. A. Converse, Ceresco, Howard County:

For twelve years I have had from 200 to 400 head of sheep; have had no epidemic or contagious diseases; my sheep run on the same pasture all the time, which is flat, low, prairie land. As nearly everybody is investing in sheep there will be a great increase in numbers for the next five years, when the country will be overrun, everybody sick of sheep, and the business flat. The greatest drawback to the industry is dogs, though I have lost none by them, for I yard close every night and kill all the dogs that come around.

Samuel Russell, West Grove, Davis County:

To make the sheep business profitable one must pay strict attention to the flock every day; exercise care in selecting rams for breeding purposes; keep sheep out of mud, dirt, chaff, and hayseed; have a nice, clean place in which to shear the sheep and store the wool; tie up fleeces nicely and carefully, throwing out all filthy tags, etc., so as to have the wool look nicely and clean. Have shade trees in summer pasture, change pastures frequently, have water so sheep can get it when they wish; also keep salt, copperas, and sulphur mixed in troughs for them to run to, and you will make good money with sheep.

James E. Picken, Ottumwa, Wapello County:

I, with my father, have been interested in sheep in this county since 1850. At one time we had plenty of out-range and ran large flocks, but now the farms are all inclosed and I only keep from 600 to 800. I am now crossing Merino ewes with Shropshire bucks, as the price of wool is low and the demand for mutton growing.

Lewis Bigelow, Atlantic, Cass County:

At the present time sheep husbandry here is in its infancy, there being only about 4,000 sheep in the county. In 1890 my sheep doubled their value in lambs and wool. Last year they increased in value about 80 per cent, and the prospect for this year is very flattering. The wool gives us an early and extra source of revenue over that of any other kind of live stock, while our climate and soil cannot be surpassed for this business.

T. J. Rosengrant, Garden Grove, Decatur County:

I never breed from anything but pure-bred rams, and never allow any one to pick over my flock. That I do myself, and I never let myself get overstocked. Our soil is such that it produces the finest quality of blue grass and white clover, all of which is superior sheep feed, and as the land is not flat, the sheep keep in a good, healthy condition. Dogs are the greatest drawback to the business, while the wolves get worse every year. The outlook is very encouraging, though the present high prices keep a great many from investigating. The average size of eighteen flocks nearest to me is 143 head.

J. A. Hamilton, Kirkville, Wapello County:

I have been as successful as I expected to be in the sheep business. On our rolling land we have the best of grasses for summer use, and then feed is plenty and cheap for winter use. The business is growing, as the price of mutton is good. We are crossing on our Merinos with coarse-wooled and mutton rams, thus increasing their size. The loss of sheep by dogs is greater than that by all other causes combined.

Henry Bell, Atlantic, Cass County:

There is no kind of live stock that pays as well on the investment, when good care is given, as sheep. Our greatest difficulty to contend against is wire fences, dogs, and wolves. Against these we have no protection. A small flock of good sheep is a great advantage to any farm.

R. B. Atchison, Albia, Monroe County:

My father had sheep before me, so I was interested in sheep quite early in life. Now I am near middle age and am always delighted in having the best sheep. Until a few years ago I believed the best were always found in the Vermont Merinos, but times have changed and progression is going on, so am I, and now I have the Dickinson Delaine Merino, whose wool sells 3 cents higher than any other kind. I care for my sheep's health as I do for my own; don't let them suffer for feed, and don't

pamper them. Give my rams plenty of exercise, but never let them loose with the ewes at breeding time. The sheep business is only beginning to develop in Iowa. Here we have the best of climate for sheep, the rolling land affording the finest blue grass pastures, and soil that will produce abundance of grain, grass, and vegetables.

George T. Underhill, Knoxville, Marion County:

Have been in the business twelve years, and believe that I have the oldest established flock of imported and registered Shropshires in the State. The verdict of three-fourths of the farmers you meet is that sheep pay better than any other kind of live stock. There is a bright future in store for the shepherd. The demand for mutton is daily increasing, and even while the price of wool is down it pays all expenses for wintering and summering the sheep, while mutton, which is the biggest item, is clear profit. We have no obstacles here worth mentioning, but many natural advantages for the business, such as rolling, self-draining lands—no marsh lands, so detrimental to the sheep industry. In winter we feed plenty of hay, some corn and oats, and house during stormy weather only; in summer let our sheep run on pasture, and in the fall, after hay is cut, they have our meadows.

W. K. Rouze, Tracy, Marion County:

My experience with sheep for the past ten years has been that for my outlay and care it has returned to me each year all the money that was first invested in it, and still I have more than my original investment, or, in other words, it has made me 100 per cent. In winter, at nights, I house my sheep in a well-ventilated barn, and give them a full feed of hay, and in the day they run in stalk-fields and pasture, with one good grain ration. In summer they run on pasture with plenty of good water; are corralled in dry lots by night; I use plenty of bells. About one-fifth of the farmers in this county are extensively engaged in sheep-raising, and they are prospering, building good sheep barns and raising winter lambs to ship to early market. We experience our greatest difficulty from dogs and wolves. Some scab is being introduced from sheep shipped from the western ranges.

David Jay, Blakesburg, Wapello County:

I have handled sheep for twenty years, but have not kept as large flocks as some farmers. The sheep industry is improving and the outlook is favorable; and why should it not be, since sheep are better cared for than formerly? We find better profits in fewer sheep. We are improving the breeds and looking after the mutton qualities as well as the wool. Tell our brother shepherds to get the best sires of whatever class or breed they prefer, then if they have a love for sheep they are fixed for the business and will stick to it; giving it the same care and attention that they would to succeed in any other undertaking, we will guarantee that "Mary's little lamb" will pay the mortgage on the farm.

Capt. W. H. Jordan, Des Moines, Polk County:

From 1851 to 1861 I handled Merinos in Washington County, Mich. Then in 1889 I began importing Shropshires and Oxfords in Iowa. These I am fully convinced are the sheep to make the mutton cross. Iowa, with her blue-grass pastures the year round, with dry, rolling land and no long rainy seasons, can produce as successfully the great English mutton and wool-bearing sheep as Great Britain. There are in Iowa to-day no domestic animals thought of and talked so much about as sheep. There are no other domestic animals so much needed in our economic outfit to round out and complete the triumphant ascendency and possibilities of Iowa's live-stock industry as the pure-bred, wool-bearing mutton sheep; and yet no other division of our stock industry, great or small, is so crippled and held back from golden opportunities easily within reach as sheep-raising within this State. Indians, wolves, and dogs were first on the ground, and have stood face to face the natural enemies to civilization and sheep-raising. The Indians long since disappeared, but the dogs and wolves remain.

L. M. Hartley, Salem County:

Have been interested in sheep twenty years—the first ten in Merinos and the last decade in Shropshires. The last named are my favorites. For the last eight years I have abandoned sheds altogether, and I am meeting with better success than when I used them. No snowstorm affects them; neither does the falling rain. Nature provides them with a protection that wards off the inclemency of the weather. The only time sheds are needed is in early lambing time, when great care and the utmost vigilance is necessary until the lamb is twenty-four hours old, when all danger is over. Always feed well; never let a sheep get hungry. In winter give plenty of good fodder and one ear of corn per day for each sheep. In feeding the common flock I have discarded altogether the hay rack, nor do I allow the sheep to run to hay or straw stacks, as it is detrimental to both the sheep and the fleece. The blue-grass sod is preferable on which to feed hay or corn in the ear.

NEBRASKA.

The sheep industry of Nebraska has been regarded heretofore as the least important branch of the animal industry of that State, but at the present time it is attracting considerable attention from farmers and stockmen. With reference to sheep husbandry it stands as a typical State of the agricultural country of the transmissouri region, hence the writer has gone into details in his investigation with reference to the present condition of the industry and its future possibilities.

It is quite evident that sheep husbandry has now assumed a permanent character, and consequently is regarded with more favor by the farmers of the State. The result will be beneficial to the animal industry, by giving greater diversity to live-stock husbandry, and thus assure more substantial prosperity to the stockmen of the State. The stockmen of Nebraska are fortunate in having a live-stock market within the borders of the State at Omaha, besides having competing lines of railroads within easy reach of the Kansas City, St. Louis, and Chicago markets. Another favorable condition for sheep husbandry, especially from a mutton standpoint, is that no present sheep-owner will probably ever experience an overproduction of mutton or receive a slow prices for live sheep as now prevail for cattle. In a letter from W. N. Babcock, general manager of the Union Stock Yards Company, of Omaha, under date of May 10, 1892, he says: "In regard to our sheep market, I might say that our receipts of good marketable sheep are always short of the demand, and a much larger number would be slaughtered by our packing industries if they could be purchased on the market."

The receipts of sheep at the Union Stock Yards have steadily increased from year to year since the establishment of the yards eight years ago. During the first year, 1884, only 4,188 head of sheep were received, while in the year 1891 there were received 170,849 head. The total receipts for eight years is 783,973 head. The largest receipts in one day were on September 24, 1891, when 8,732 head were received. The total number of sheep slaughtered for city use and South Omaha packing during 1891 was 80,960 head.

The South Omaha market is a Nebraska institution of which the State may well feel proud, as it gives the stock-raisers a home market and has developed into one of the leading Western markets since its establishment eight years ago. The following from Drovers' Journal of August 25, 1891, is a just tribute to this newly opened market for the live stock of the West:

From what was little more than a railroad feed yard on the main line of the Union Pacific Railroad in 1885, has sprung, in the short space of six years, this vast business with its four immense packing plants, which have a combined capacity of transforming daily 2,000 cattle, 9,000 hogs, and 1,000 sheep into a meat product, which the twelve great trunk lines now centering here convey to all parts of the country—north, south, east, and west. And these same twelve railroads, which run through the greatest corn and grazing lands of the world, afford unexcelled facilities for the marketing of live stock at this point as well as for the distribution of cattle known as stockers and feeders to any part of the four great corn States west of the Mississippi, Nebraska, Iowa, Missouri, and Kansas.

In a discussion of the sheep industry before the Nebraska Improved Stock Breeders' Association, Col. Savage, of the State Agricultural College, in the course of his remarks, stated the following facts:

I will say that I am acquainted with pretty nearly every stock-producer in the State of Nebraska, both of cattle, hogs, and sheep, and I can say without fear of contradiction that within the past five years those who have handled sheep have made money, and good money; and I can cite many instances of my own personal knowledge where they have made in that time a clear profit of $10,000 to $50,000, and I don't know of one cattle-feeder that has made one-half of the smallest amount I have mentioned, while I can mention you the names of more men, good men, honest, hard working men, that have been in the cattle business that have actually failed, absolutely lost not only their profits, but all the money they had when they went into the business, than there are men in this room; and I will venture further, that there is not a gentleman that will mention the name of one man that has handled sheep, and handled them reasonably well, within the same length of time that has not made money on them. The time was in olden times when circumstances were different from what they are now, when the law of supply and demand had something to do with our meat product—when things were different * * * and they did this or did that that would cause a very great fluctuation in the value of sheep. But it is a fact that the man who has gone into sheep and staid with them year in and year out, up and down, that man has been more successful, made more money, and made it more easily than the cattlemen have. I have had some little experience with sheep years ago, and with cattle all the time, and I contend that it requires more patience, more practice, more experience, more ability, more brain power to take care of a flock of sheep than it does to take care of a herd of cattle. It is more of a study, and when the flock of sheep gets that attention there is no class or kind of stock on the face of the globe that will pay greater returns year in and year out.

In the following pages is given a brief review of the sheep industry as it exists at the present time, together with the essential facts pertaining to Nebraska sheep husbandry. The leading feature of the industry in this State is sheep-feeding, which has been investigated by H. E. Heath, editor of the Nebraska Farmer, and his report is given herewith.

NUMBER OF SHEEP AND VALUE OF THE INDUSTRY.

The number of sheep in Nebraska on January 1, 1892, was much larger than generally supposed, owing to the fact that they are fed during the winter, and do not therefore enter into the estimates of the officials who usually take their figures from the assessment rolls of the State, which is misleading both as to numbers and value. For example, the number, value, and average of sheep as returned by the several counties of the State of Nebraska, as assessed for tax levy of 1891, is 182,393, valued at $120,214, an average of 66 cents. The highest value is for 253 sheep assessed in Douglas County at an average of $2.38, while the lowest average is given in Dawson County for 574 at an average of 23 cents. The Government figures and values for January 1, 1892, are more nearly accurate, and are as follows: 269,804 sheep, value $690,887, or an average of $2.56, nearly 50 per cent greater in number, and about 400 per cent greater in value, a remarkable difference between two official reports. Careful investigation shows that the Government's figures are approximately correct, although conservative. The State's figures, as compiled, are purely for taxation purposes, but absurdly are used as making an exhibit of the State's resources, a manifest injustice to the sheep industry, while on the other hand the Government's statistics are compiled for the purpose of making an exhibit of the industry on its merits, hence are more accurate although frequently dependent for information on local correspondents who are not always sufficiently competent, or are, perhaps, inexperienced regarding stock statistics, or are apt to rely too much on the figures of the local assessor.

In this report, however, the author has endeavored to be as exact and accurate as possible in order that the sheep industry of Nebraska should have a reliable review of the condition and resources of the industry, hence no trouble has been spared to verify facts and figures for the purpose of a proper exhibit of one of the industries of the State. The result of the investigation gives the number of sheep on hand in Nebraska in January, 1892, exclusive of those brought in from other States for feeders, 321,948. To this number should be added 291,700 feeders, which would make the total number in the State 615,648 at the above date. The value of the same in round numbers was not less than $2,000,000. The net price realized for the wool clip of 1891 was $266,120, and for the muttons disposed of, mainly in the early part of 1892, not less than $1,500,000, or in round numbers the product of the sheep industry of Nebraska for the past season was over one and three-quarter million dollars, a creditable exhibit for the infant live-stock industry of the State. In other words the sheep industry of the State represents a total cash value of not less than $5,000,000. This includes the industry in all its various branches, the sheep and all property pertaining to and necessary for conducting successful sheep husbandry. In an exhibit of the resources of the State there will be found no other industry which yields so large returns for the capital represented as does sheep husbandry in Nebraska.

GENERAL FACTS ABOUT THE INDUSTRY.

About ten years ago the most numerous classes of sheep throughout Nebraska were the Merinos and their grades, a large number of which were of Mexican foundation. But these sheep have gradually grown less in number each year in consequence of the decline of the sheep industry, which began in this State about 1883; but apparently the decline ended when the sheep-feeding industry began. Since that time the industry has been on the upgrade, and is rapidly assuming a permanent basis. The day for the immense flocks on the range has gone by, and the flocks are now much smaller in size. A great portion of the range formerly occupied by these large holdings is now cut up into small farms. The difference from the old régime is more sheep-owners and smaller flocks.

In many counties, according to the State auditor's report, no sheep are reported, or, at least, they could not be found by the assessor. The counties which report no sheep, or less than one hundred, for the year 1891, are as follows: Blaine, Brown, Chase, Dakota, Frontier, Furnas, Gosper, Grant, Harlan, Hayes, Hooker, Howard, Logan, McPherson, Phelps, Red Willow, Thomas, and Thurston.

The sheep that are raised in the central and western counties are Merinos, their grades and crosses; while the small farm flocks of the eastern counties consist mainly of the mutton breeds or cross-bred Merinos as well as pure-bred Shropshires, Leicesters, Southdowns, and a few Merinos.

Regarding the size of flocks there is a great range as to numbers. The extremes may be placed at from 10 to about 2,000. These flocks, of course, refer to sheep that have been raised in the State. The average flock among the farmers runs from a few head to a hundred or more, while the flocks of the exclusive sheep men do not run less than about 500, and from that upwards. The very large holdings are owned by the feeders who make a business of handling sheep by the thousand but do not breed them—simply finish them for the market. They contract for western sheep, bring them in late in the fall and feed them from two to four months, then ship to market. Their object is mutton alone, as they usually sell before shearing time. A few shipments, however, have been retained until after shearing in order to secure the additional profit from the wool clip, which more than compensates the anticipated loss of late mutton shipments.

The general character of the soil of the grazing lands of Nebraska includes almost every kind from the rich black loam to the clay and sandy soil. In the thickly settled farming districts the soil is exceedingly rich, and tame grasses are produced in abundance when the wild variety disappears. The lands preferred for pasturing large flocks are to be found in the central and western portions of the State where the land is rolling or broken, and where pasturage is practically unlimited and cheap. Outside of some tame-grass pastures in southeastern Ne-

braska the sheep subsist mainly on the native prairie grasses, blue stem and buffalo grass affording the bulk of pasturage. There are numerous other kinds of grasses, but not so general as the two mentioned. The buffalo grass is about the only kind that affords winter pasturage to any extent, and is now confined to western counties of the State. The other sorts are worthless after heavy frosts. Hay is produced in large quantities in almost any portion of the State and is sufficiently nutritious to maintain stock during the winter. Grain feed is generally abundant every season at reasonable prices, so that the flock masters have no fear as to their food supply.

The water supply is also abundant and excellent in nearly all the streams of the State. Aside from these rivers, creeks, and streams, water is supplied from wells drawn by wind power. The supply apparently is inexhaustible in these wells. The writer has never heard of any well of any consequence ever having gone dry.

Timber throughout the State is very scarce except along a few of the streams. The only timber is what has been produced artificially on the timber claims, or in the groves set out by the early settlers, so that it is not to be depended on for shelter. The usual shelter consists of cheaply constructed sheds, although in the broken and hilly portions of the State the canyons and ravines afford considerable protection. The only shelter required for sheep is during the winter, and that is seldom used in the daytime except during deep snows or severe winter storms. The experienced shepherd always provides the requisite amount of shelter for such periods.

The annual losses from all sources have been reduced to the minimum and are generally uniform each year, for the reason that sheep-owners have become familiar with the industry and the best methods to be pursued; hence it is comparatively easy to forecast the annual loss.

During the early period of sheep husbandry in Nebraska, when the country was new and flock-masters inexperienced, the losses some years were very heavy, especially from exposure. But now, owing to a better knowledge of the country, its climate, and the most practical methods of conducting the business, the losses are greatly reduced. Especially is this true from losses caused by severe weather. In fact, a large number of sheepmen report no loss, or at most, a few head on account of exposure. It is a rare occurrence to have a loss of 5 per cent any year. The average losses reported to me from exposure ranged from 1 to 2 per cent, except in a few exceptional cases. The greatest loss reported for 1890 and 1891 occurred in Sherman and Stanton counties. In summarizing the various reports on the subject of loss from exposure, the average for Nebraska would not exceed 2 per cent.

The annual loss from depredations of wild animals and dogs, unlike the loss from exposure, appears to be steadily increasing rather than declining, and therefor is unquestionably the most serious loss encountered by the shepherds of the State. In some of the eastern counties

as many as 10 per cent are lost each year from the ravages of worthless curs and dogs. In fact, they do much more damage than the coyotes or wolves. In the northern and western counties the devastation of the flock is due almost wholly to wild animals, such as wolves or coyotes. The annual loss throughout the State by the ravages of dogs or wild animals exceeds by far the loss from all other sources, and not a single county where sheep husbandry is conducted is exempt from the ravages of one or the other, notwithstanding the vigilance of flockmasters to prevent it. From these sources alone sheep-owners report losses ranging from 1 to 10 per cent, or an average of not less than 5 per cent. So, therefore, the total average annual loss of sheep from all sources whatsoever does not exceed 7 per cent.

Of the sheep brought into Nebraska from other States and Territories the bulk came from the South and West, and are mainly wethers which go to the feeders, although the number of stock sheep brought in is constantly increasing. The general belief among sheepmen is that both the fleece and the constitution of the animal improve; yet, where such is the case it is owing to the sheep receiving better attention and the providing of a more abundant supply of feed. One thing is certain, that sheep brought in from any part of the United States are none the worse for having been brought into Nebraska. The fleece of improved Eastern sheep when brought into central or western Nebraska becomes dryer and lighter, and there is less yolk or oil in it. But the constitution, after the necessary period of acclimatization, appears to improve, and the sheep becomes more vigorous and robust. The State is so well adapted to sheep that no matter what breed or class of sheep is brought here, they all do well and no bad results occur because of the change. Sheep-owners have no hesitation in handling any class of sheep when they have a suitable location and equipments.

The sheep-breeders of the State generally prefer pure-bred rams, which are used mainly in the order named: Merinos, Shropshires, Cotswolds, Southdowns, and French Merinos, the first two named being generally used. In the larger flocks in the western part of the State quite a number of grade and cross-bred rams are used, and many of the larger owners keep both the fine-wool and medium-wool rams, breeding the latter with the flock, except where the rams are kept up and properly fed and cared for, then from 75 to 100 are given each buck. The age of the rams used is two years and upward. Many sheep-owners now realize that double the service is secured and much more satisfactory results are obtained, as well as a greater per cent of lambs where hand breeding is employed. It is an advantage always to have them kept up and fed during the breeding season, but at the present time this plan is not generally followed. The per cent of lambs raised necessarily varies according to the size of the flocks and the methods of breeding practiced. In the farmer flocks nearly every ewe breeds and raises a lamb, while in the larger flocks probably 5 per cent of the

ewes fail to breed. With the mutton breeds or small farm flocks a much larger per cent of lambs is secured. Last year (1891) was a great year for twins and triplets. One flockmaster raised 110 lambs from 100 ewes; another 76 lambs from 65 ewes; a Richardson county sheep-owner raised 120 per cent of lambs, while a York county sheep-owner secured 136 per cent of lambs. Taking one year with another, with farmers who have small flocks or where mutton breeds prevail, from 95 to 100 per cent of lambs are raised. In the western and northern part of the State, where the large flocks are held, from 75 to 95 per cent of the lambs dropped are raised, or an average of about 85 per cent.

In view of the methods of permitting the rams to run with the ewes during the breeding season without special care, it is somewhat surprising that so large a per cent of lambs is raised. Owing to indifference or lack of vigilance during the lambing season, a large number are lost that might have been saved had they received more careful attention and been provided with sufficient help at that critical period in sheep husbandry. When the ewes are kept in good condition and not subject to undue exposure in winter, and receive the proper attention at the time of breeding as well as at the lambing season, there could be saved from 5 to 10 per cent more lambs in the larger flocks than are now saved under existing circumstances.

As a rule most of the Nebraska sheep-raisers provide food and shelter for three months. In view of the number of months in which the pasturage is practically worthless, it is necessary to provide hay. It always pays to have a supply of grain, and it is gratifying to note that most of the sheepmen provide both hay and grain. A number of the sheep-owners have good barns, but the majority simply provide open sheds from 5 to 10 feet in height, tightly closed on three sides and usually open to the south. The walls of the sheds are either of frame or of sod, and the roof consists of either lumber or poles covered with straw or hay. In fact almost anything in the way of shelter that will serve as a wind-break and protection from the snow is used. These sheds are intended for use only when the weather is stormy or for shelter during the cold nights. In the closed sheds or barns it is very important that good ventilation be provided, and that the floor be kept as clean as possible.

The majority of Nebraska sheep-raisers are landowners, and the value of the land ranges from $5 to $30 per acre, according to location. Very little land except school lands is leased by the sheep-raisers. The unoccupied land in the border counties is usually free grazing, or can be leased for the taxes or 10 cents per acre.

A compilation of numerous reports received from some of the principal sheep-raisers of the State shows that the main object of only three is the production of wool, while ten state that mutton is the exclusive object. In all the other reports received it is stated that both wool

and mutton are equally the main object sought in sheep husbandry, and with that end in view the middle-wool rams are bred to the fine-wool ewes, and the fine-wool rams to the medium or coarse-wool ewes.

In the main the sheep-raising industry is confined to the general farmer. In central and western Nebraska there are a number of stockmen who are exclusively sheep-raisers, but such are the exception instead of the rule. Their flocks seldom number less than 1,000 or more than 5,000; Merino sheep comprise the bulk of every flock, and yet a few of the flockmasters are using medium-wool rams. With these the production of wool is, of course, the chief object, but mutton is always an essential consideration.

The shearing season begins in May and continues until July. The bulk of the wool clip is made from May 15 to June 15, immediately after lambing. The only sheep that are shorn early in the spring are those that are fed for market, and while heretofore but few of the feeders were shorn before shipment, it is only during the present season that experiments of any consequence were tried. As they were so satisfactory, it is safe to assume that hereafter a very considerable number of sheep will be shorn before shipment, especially by those who are favorably situated to do so. The additional profits from this course fully warrant this new departure. It has been ascertained that the fleece from a full-fed sheep is much greater than from sheep that have simply been wintered in the ordinary way, and the wool is better in quality, having a stronger fiber and a longer staple. The only serious objection urged against this method is too early shearing and the danger from exposure, or the liability of a decline in price because of late marketing. Yet it will have a tendency to prevent overmarketing, as will eventually become the case when the sheep-feeding industry becomes more general throughout the West.

The shearing of the sheep is done in barns or sheds, and the wool sacked at once. The farmer flocks are usually shorn by the owner himself or by his hired help, and in the larger sheep districts, in the western part of the State, the shearing is done by bands of men who go from place to place, and who receive from 5 to 9 cents per head. They also tie up the fleece. The wool is usually disposed of at once either to the local buyers or to factories, when it is possible to dispose of it in that way, otherwise it is consigned either to St. Louis, Chicago, or to the Eastern markets, although the bulk of the consignment goes either to St. Louis or Chicago, these two places being the favorite wool markets. Some few shepherds in the western part of the State who have car shipments bale their wool instead of sacking it. However, this is done only when a lower freight rate is made for wool done up in this manner. Some farmers who have only a few sheep sell their wool to the local merchants the same as other produce. More wool is now handled at Omaha and Sioux City, but not in sufficient quantities to make a general market.

The wool product of Nebraska includes nearly every sort of wool from fine to coarse, although the bulk is fine and medium, and the average net price realized by the growers of the State is from 13 to 18 cents, and the gross price received is from 3 to 4 cents more per pound. Heavy fine wool brings less, and fine medium wool more, however, than the general average given.

The average weight of fleece is much greater than is supposed. The lowest average of 5 pounds was reported in the western border counties where light medium wool is mainly produced, while in good agricultural counties, where the bulk was fine and medium wool, the average weight of fleece was put at 9, 12, and 15 pounds. One flock of 3,500 fat wethers from Pierce County, which was sheared before shipment, made an average of 15 pounds. The average Nebraska fleece may safely be placed at 7¼ pounds.

The flockmasters of Nebraska generally aim to dispose of a certain number of sheep each year, ranging in amount from one-fifth to one-half of the flock, either as stockers or muttons, but usually the latter, and then only as many as will represent the annual increase. The aim is to keep a number equal to the original flocks. Stockers are ordinarily sold in the fall at about $2.50 per head. The wethers are sold to feeders, if not fed by the owner, and are usually sold at the market price, which has ranged from 4 to 6 cents per pound. When but a few muttons are sold they go to the local butcher, at the highest market price. The larger offerings in car lots are shipped to Omaha, Chicago, and occasionally to Kansas City, after January 1. Where car lots of stockers are sent to Omaha for sale they are very apt to be sent in any time after shearing, or when the grazing season is nearly over.

The average weight of mature wethers depends upon whether they are Merino grades or of the regular mutton breeds. The fine-wool sheep range in weight from 90 to 125 pounds, or an average of 100 pounds. The mutton breeds, of course, weigh more. Spring lambs when sold weigh from 40 to 80 pounds gross.

In handling sheep, the average cost per sheep per year—all expenses included—depends on whether the flockmaster is in the business exclusively or whether it is a part of mixed husbandry of the general farmer. The size of the flock also enters into the consideration. The cost of maintaining and handling sheep among the farmer flocks in the agricultural districts, where shelter and feed are provided, is variously estimated at from $1 to $1.25 per head, while further west, in the range country, where little feed other than prairie hay is used, the cost is estimated at from 50 to 60 cents, so that a conservative estimate of the average cost under the two prevailing methods can be placed at $1 and 50 cents, respectively. It is safe to assume that the fleece alone will more than defray all expenses of handling the sheep, no matter what breed or grade is considered, or in what part of the State the sheep are raised. The farmers do not seem to give the sheep any credit for the enriching

of the land, or the subsistence of the animal on weeds and surplus forage that would otherwise go to waste were it not consumed by the sheep. When sheep are grained or full-fed the average cost is nearly doubled, likewise the profits.

An item of expense is the wages paid farm hands or herders, which runs from $18 to $25 per month, board included. The wages of day laborers during the lambing and shearing season is about $1, or if sheared by the head the usual price is 6 to 7 cents per sheep.

Among the local advantages for the sheep industry enumerated by the sheepmen is the abundance of cheap feed and grazing lands, and an everlasting supply of good water in the streams or never-failing wells. The land is dry and rolling, the climate favorable, and the winters usually dry and free from snow. In the northwest part of Nebraska the land is very rolling, affording natural protection for the sheep from cold winds and rain. Much of the land consists of sandy soil which is well grassed over. In the southeastern part of the State the soil is a black loam which produces grain, grass, and root crops in great abundance, and makes it a great and unsurpassed location for feeding Western sheep, or maturing mutton sheep. The native grasses are everywhere abundant, and in the western part of the State, in addition to good hay lands, there are the buffalo and grama grasses, which afford excellent pasturage during the winter months. The atmosphere is dry and invigorating. In many portions of the State the dry climate enables the land to be utilized and benefited that would otherwise remain vacant and unoccupied.

The chief drawbacks and disadvantages encountered by those engaged in the sheep industry in Nebraska are the ignorance and prejudice of many farmers and stockmen against the business, and who, therefore, are not disposed either to encourage or experiment with sheep husbandry. In the thickly settled portions of the State sheepmen do not secure sufficient cheap range for large flocks, and the unfenced farms make herding difficult. This, with the prevalence of numerous worthless dogs, which ravage the flocks and are the natural and persistent enemy of sheep, are a constant menace to the sheep industry.

Another difficulty encountered in the rich farming districts is the prevalence of cockle and sand burs, which get into the fleece where sheep are allowed to run in the fields after the crops are garnered. In central Nebraska, where the prairie grass of the blue-stem variety affords the bulk of pasturage, the grazing season is too short, as the grass starts late in the spring and the heavy frosts in the fall reduce the time of pasturage and require too long a feeding period.

There are no prevailing diseases of any importance; the sheep are reported uniformly healthy. The exceptional ailments mentioned are grub in the head, goiter, and some lung affection. Scab is occasionally brought in from the west, and last season some small flocks were troubled with ticks, but after a thorough dipping these few cases were soon eradicated.

The industry in Nebraska, which has been declining since 1883, is now on the upgrade again, but on a somewhat different and, I believe, a permanent basis. Many farmers who have been raising cattle, horses, and swine in connection with crop-raising are disposed to curtail the number and handle a few sheep. The only serious drawback to a constant and more rapid development of this phase of the industry is the fear of ravages from dogs, wolves, and coyotes. The greatest development will be in the western counties, where the country is well adapted to sheep-raising much more than to grain-farming or the handling of other classes of stock.

The best method for profitably conducting sheep husbandry is to secure either good choice western ewes, or equally as good a class of middle-wool sheep, and they should be allowed to run in such sized bands as the owner is properly equipped to handle. Mutton should be the main object of the general farmer, and both mutton and wool the main object of the exclusive sheep-raiser. The best ram for use is a closely-wooled buck, either a large size, smooth-bodied Merino with a dense fleece of long staple, or the closely-wooled Downs, like the Hampshire Downs and Shropshires. The long-wool bucks, such as Cotswolds, Lincoln, and Leicesters, where spring lambs are the main object of breeding, will undoubtedly give satisfaction, provided the grower has the necessary conveniences for the business and only raises a limited number, but for the exclusive raiser the Western sheep make a very satisfactory foundation and may be run in large flocks, and improved by good care and breeding. Sell surplus wethers, culls, and aged ewes to the Eastern feeders. Never stint on feed that will keep the animal growing and in good condition.

Give sheep the same care and attention that is given dogs and they will lift the mortgage, improve and enrich the farm, provide the family with luxuries never before enjoyed, and permit the owner to acquire a competence.

Nebraska is capable of feeding and raising a million sheep annually, and whenever she reaches that point prosperity will prevail among the patrons of live-stock husbandry to a greater extent than ever before.

THE SHEEP-FEEDING INDUSTRY.

Nebraska was the twenty-fourth State admitted into the Union, assuming the responsibility of statehood in 1867. The population in 1891 was 1,058,910. The average length of the State is 400 miles and its width is 200 miles, with an area of 76,185 square miles, or nearly 50,000,000 acres of land, every acre of which is suitable for agricultural purposes or grazing.

Nebraska has ninety-two counties, and lays claim to more good agricultural land to the square mile than any other State in the Union, and from facts and figures carefully compiled it will be seen that it is near the head of the list of the agricultural and live-stock producing

States. Her wonderful agricultural resources, her natural grazing advantages, and her location in the interior of the United States far from the seaports, all admirably adapt her as one of the greatest live-stock feeding centers of this continent.

The following official figures show the increase in the sheep industry during the past thirty years: In 1860 there were in the State 2,355 sheep; in 1870, 22,725; in 1880, 199,453; in 1890, 239,400.

It must be remembered that thousands of sheep are fed in the State that are not enumerated in the above. These sheep are driven or shipped into the State from the West about October or November, fed and made ready for market in from three to four months, then shipped out, so the assessor does not get them listed for taxing; hence no official record is made of them.

The greatest number of sheep fed in Nebraska in any one year was during the winter of 1889 and 1890, when the number reached 625,000 head. This was following the year of a big corn crop. The next winter, 1890 and 1891, there were 550,000 head fed, and this was following the year when the corn crop was light and hay reached $18 per ton. On the whole, it was a disastrous year for feeding, and considerable money was lost in the business. The result was that a less number were fed the past winter, which was by far a more profitable year for the business. Dodge County was the banner sheep-feeding county a year ago, when not far from 200,000 sheep were fed. Last winter the number fed in this county did not exceed 35,000 head. The past winter the heaviest feeding was carried on a little farther west in Hall, Merrick, Buffalo, and Kearney counties, along the Platte, Loup, and Wood rivers; also in Jefferson and Gage counties. The favorite location with sheepmen is where there is an abundance of hay, and where corn, oats, and mill stuffs can be had cheaply, and then it is very desirable to get where the rainfall is light, so as to have as little mud as possible. It hardly seems possible that so many sheep can be fattened in from seventy-five to one hundred days, when so few of them are housed or protected from stormy weather, yet it is safe to say that nine-tenths of the sheep fed in this State have no shelter whatever, more than what is given by the board fences around the feed lots or hayracks. Often where board sheds are provided the most of the sheep will stand out in the snow or rain until their fleeces are quite wet, then go dripping under the sheds until it is muddier and worse there than it is outside. Sheep to do well need dry, comfortable quarters, with as little commotion about them as possible; clean, dry troughs to feed from; clean water and racks for hay into which they can not get their feet. It is next to impossible to fatten a poor sheep in cold weather.

It is estimated that it will take from 1½ to 2 bushels of corn per day to feed 100 head of sheep, but it will not average a bushel and a half a day per hundred head for a hundred days, the average time of feeding, yet grant that it takes 2 bushels, and we find that all the sheep raised and

fed in Nebraska will not consume 22 per cent of all the corn raised in the State, or more than $100,000 worth, and perhaps the same number of dollars' worth of hay, oats, mill-stuff, and linseed oil cake. What do they give back in return for this $200,000? The average number of pounds put on a sheep during the feeding season is 15, but if we call it 12 pounds, or 66 cents per head, our 500,000 head of sheep pay back in return for the feed given them, $330,000. It is a poor sheep and a poor feeder that can not easily net $1 per head for the sheep he feeds, to say nothing about the increased growth of wool and the valuable manure returned to the soil to fertilize it.

No other kind of live stock can give so good returns in so short a time on the money invested in them as sheep. In no other State than Nebraska are the risks of loss by disease, dogs, wolves, and other sources so light.

There are some people who think the business of feeding sheep will be overdone, but in this they are mistaken, because the American people are just beginning to appreciate and know the value of mutton as human food, and statistics show that the consumption of mutton is increasing faster than our population. One gets a pretty correct idea of the magnitude of the number of fat sheep handled annually by studying the following table or receipts and shipments of sheep at four of the leading commercial distributing points in the West:

Receipts and shipments of sheep at Western markets.

Year.	Chicago.		St. Louis.		Kansas City.		Omaha.	
	Receipts.	Shipments.	Receipts.	Shipments.	Receipts.	Shipments.	Receipts.	Shipments.
1875.....	418,918	243,804	125,679	37,784	25,327	17,742	.....	.....
1880.....	335,810	156,510	205,969	93,522	50,611	26,285	.....	.....
1885.....	1,003,598	260,277	362,858	233,391	221,801	115,755	18,985	8,408
1890.....	2,342,000	906,500	490,320	231,900	398,600	201,450	160,890	114,320?
1891.....	2,153,537	.....	.....	.....	.....	.....	.....	.....

The difference between the number of sheep received at Omaha in 1890, and the number shipped out shows that the number slaughtered was 63,838. The majority of these were consumed in that city. The records show that Swift & Co., of South Omaha, who do the largest sheep-killing business at that market, slaughtered, in 1890, 34,933 head, and that during 1891 they killed 56,646 sheep. Allowing that they kill over one-half of the sheep at that market, it is safe to conclude that in 1891 there was at least 100,000 head of sheep slaughtered at South Omaha, which is about one-fifth of the entire number fed in the State that year. Thus it would seem that four-fifths of the sheep fattened in Nebraska are consumed outside of the State, and there is no question but that the best ones are shipped out. It is not the proper way to educate our people to eat more mutton by giving them the poorest on the market. Notwithstanding this, there is a growing demand for good mutton in all the larger cities and towns of the State, and the

packers at South Omaha are unable to supply this demand. This would not indicate that the sheep-feeding business of Nebraska is likely to be overdone.

Nebraska, with her great abundance of cheap feed will always be the favorite feeding center for the western range sheep. This industry is yet in its infancy, and it is safe to predict that there will be not less than three-quarters of a million of sheep fed in this State in the winter of 1892 and 1893, especially if crops are good the present year, and the indications are most favorable, as there has been a greater amount of rainfall this spring than any former season, so the soil is in splendid shape to produce an enormous yield.

A close and careful study of the sheep industry of the State reveals the fact that not 10 per cent of the sheep annually fed and shipped out are raised here, but are brought in from the western range and fed from three to four months before shipping to eastern markets. Why should not the farmers of Nebraska help to furnish a greater portion of this supply? It is true that we can not compete with those large breeders on the range. If half the farmers of this State would keep and properly care for a flock of at least 100 head there would be better farms, larger crops, and fewer mortgages. The farmer who intelligently handles his flocks can count on four sources of revenue from them—mutton, wool, lambs, and last, but not least, an increased fertility of his land. Any one of the items named should be sufficient inducement, but when all four are combined there is no one kind of live stock that will give so sure and quick returns on the money invested. Some people find it profitable to handle them for mutton alone; then if the price for mutton does not suit the farmer, he can hold his sheep and get good pay out of the wool. When the ewes are properly handled they will raise 90 per cent of their lambs, while many of them will do even better than that. If the farmer is not fixed to graze a large number of sheep, he must keep the larger and better bred sort so as to get the most out of the business. The demand is for a larger mutton sheep than is produced on the range. A wether weighing 100 pounds does not meet the requirements, so the breeder should strive to produce an animal that will weigh from 150 to 200 pounds. There are men in this State who have put lambs, from eight to nine months old, on the market weighing from 85 to 95 pounds that readily brought 7 cents a pound. These lambs were sired by pure bred Shropshire bucks.

Some of the most extensive feeders in the western part of the State, who have access to sufficient range, keep over some of their culled wethers, ewes, and lambs, not fitted for market by the middle of May, and graze them another season and prepare them for an early Christmas market. The majority of our feeders begin feeding a little the last of November or in December, and get on full feed by the last of December or early January, and begin shipping to market later in January, and keep it up as the market suits and their sheep are fitted for it.

Commencing in April and up to June the feeder makes his purchases on the western range for his next year's feeding, and when his purchases are completed he starts his flocks eastward, grazing on the prairie grass, at the rate of five to twenty miles per day until the frontier settlements are reached in western Nebraska, eastern Colorado or Wyoming, timing themselves in reaching this section to September, October, or November. Except in a few cases, where there are western feeding stations that can be reached by driving the sheep through, they are shipped direct to their feed yards.

The outlook for this business to grow until three-quarters of a million or a million of sheep are annually fed in Nebraska is very good. Some think that the advanced price of range sheep, owing partly to a growing demand for sheep on the Pacific, will cause a less number to be fed here, but Nebraska will always be the best feeding grounds for range sheep on account of her central location between the range and the great mutton markets, her great abundance of cheap grain and hay, which is necessary to put the finishing touch on the range sheep to fit them for market. Then her climate is all that could be desired by the feeder, yet it is quite evident that to obtain the very best results from the business more care must be given to shelter and proper protection of the sheep while feeding. It will not be necessary to build extensive and costly barns, but such sheds in and around the feed yards that will protect from rain and snow storms will be found profitable.

THE EXPERIENCE, OBSERVATION, AND TESTIMONY OF NEBRASKA SHEEP-OWNERS.

Herewith are presented the experience, observation, and testimony of a number of representative Nebraska sheep-owners, who give in their own way unsolicited expressions regarding sheep husbandry in the State. They are competent to speak advisedly, because they have had actual experience and have wrestled with the sheep industry problem and demonstrated what can be done in various portions of the State.

J. A. G. Strickland, Eagle, Cass County:

There have been no real experiments made more than to keep a few sheep to supply the local mutton demand. I shall try root feeding, such as beets and turnips, believing it will be a profitable feed for both wool and mutton.

D. & J. Munchio, Hooper, Dodge County:

We have been ranging sheep for a number of years in Wyoming, and unless we can buy corn at 15 cents per bushel to feed we prefer to sell our muttons on the range at $3. We rent our feed yards, and buy our corn at about 25 cents per bushel.

George Richardson, Benedict, York County:

I am engaged in breeding pure-bred Leicesters, and the average per cent of lambs raised by my ewes is 136; the average weight of fleeces for ten years is 11 pounds. Nebraska is a good sheep State throughout, but only a few of our farmers have found it out.

James W. Bouk, Greenwood, Cass County:

Few people here have ever handled sheep, but confine themselves to growing corn, wheat, oats, hogs, and cattle. I think Cotswold or other long-wool good-sized sheep will prove very profitable in this part of the State, as they combine a larger carcass and a long staple of wool. I have tried them and am well pleased with the results.

W. H. Nelson, Lee Park, Custer County:

I have had eight years' experience in this State, and find the most serious disadvantage in the lack of tame grass pastures. The wild grass fails early in the fall, and does not start early in the spring, which necessitates the sowing of rye to extend the grazing season, or early feeding.

A. F. Swartz, Max, Dundy County:

I have been in the business five years, and never lost a sheep by disease. We raise sheep very cheaply here. I hire a boy to herd at five dollars per month. I plant a few acres of cane to feed during stormy weather; the rest of the time they subsist on buffalo grass.

J. B. Coffman, Adams, Gage County:

Five years ago we had over 60,000 sheep in this county. To-day very few are raised here. The high price of land and scarcity of range solves the question. As a feeding county Gage stands second to none in the State.

C. H. Ballinger, Lexington, Dawson County:

This State can not be surpassed for sheep-raising, in connection with other stock, and, with grain and tame hay fed them, sheep will become the most profitable stock on the farm. Mangels, turnips, and other roots make good feed, and are easily grown here. Lucerne and alfalfa are best adapted to this country; more than the other tame grasses. The greatest drawback to the business is the ravages of the wolf or coyote.

P. L. Atkins, Dix, Kimball County:

On account of our healthful climate, abundant range, and the small amount of capital necessary to start with, sheep-raising; has in the past and will in the future, prove to be one of the most profitable industries a person can engage in.

H. C. Jones, Russell, Frontier County:

This county is admirably adapted to sheep-raising, a large variety of grass, no lowland, and dry winters. It is best to keep no more than 1,000 sheep in a flock; give them a warm, dry shelter, feed grain and keep a good herder, and the loss need not be more than one per cent.

E. C. Hill, Stella, Richardson County:

I get more money out of the feed consumed by sheep than I do from hogs or cattle. From 140 head I sold wool and mutton to the amount of $500 and have 140 head left, counting in lambs. From 55 ewes I raised 76 lambs. If one of my sheep dies his pelt pays for his keep.

H. C. McCord, Taylor, Loup County:

My experience, though limited to handling from 500 to 1,000 head, is that sheep husbandry is one of the most profitable of the live-stock industries, when conducted with good sense. It gives quicker and better returns on the amount of capital invested in it than in any other business. To bring the best results it requires better shelter than is usually given in the winter, but we would never have foot-rot and very little scab, as it is so dry.

W. R. Artman, West Point, Cumming County:

The sheep-breeding business is on the decline because we have so little range left, but there are about 25,000 Western sheep fattened here each year. It takes about a bushel and a half to two bushels of shelled corn daily per 100 head until grass comes. Our winters are too long and severe to try to winter sheep without grain or proper shelter.

Ben. F. Grant, Pilger, Stanton County:

My experience in sheep husbandry extends over a period of eleven years, during which time I have been successful in making it pay me. I feed well in the winter and have good range in the summer. I keep the old sheep out of my flock by getting them fat and on the market before they get too old. Hay is plentiful and I feed it liberally. I expect to handle sheep here yet a number of years.

P. Jansen, Jansen, Jefferson County:

Have for a number of years been considerably interested in sheep-feeding. The winter of 1890 and 1891 I fed 37,000 sheep, and the past winter 21,000 head. Some years ago, when we had range for sheep, I raised a good many, but now I feed for mutton altogether. Every farmer ought to keep a small flock of sheep. They are the best kind of "mortgage lifters."

Odbert & Winett, Lincoln, Lancaster County:

We have been in the sheep business in this State for the past twelve years, feeding most of the time and handling on an average 5,000 sheep. We buy most of our sheep on the range in Oregon or Utah, and drive and graze, reaching western Nebraska in October or November, when we ship direct to the feeding yards in this county and begin marketing in January. We find the business improving all the time, as the demand for mutton grows.

F. E. Swartz, Max, Dundy County:

For twelve years I have been engaged in the sheep business, having handled from 800 to 1,200 head, and have raised cattle, horses, and hogs at the same time, and find that sheep have made more money for me than any of the other stock in the long run, and I will stay with them for awhile yet. I desire to increase the weight of my sheep. The only disease I have had in my flocks is one case of scab, brought in from Colorado or New Mexico.

W. S. Griffith, Turner, Holt County:

I began sheep-raising in this county six years ago with 200 head. Since then have bought more, and have shipped a few every year. Last year I wintered 700, raised 300 lambs, and fed and shipped 300 head, which netted me $1,150. The wool brought $730. We raise most of the corn we feed, and estimate that the feed and cost per head is about $1.25 per year. Much of our land has gone in the hands of loan companies and Eastern speculators, hence we have an abundance of range.

Eaton & Gifford, Wood River, Hall County:

Our experience in sheep husbandry dates back to 1873, commencing in Russell County, Kans., and we have fed from 2,000 to 10,000 every year since except two—1884 and 1891. We buy our sheep in Oregon, Utah, Wyoming, New Mexico, and Colorado. Have always fed mature wethers until this year, when we fed a few lambs and yearlings. The greatest difficulty we have to contend with is rain and mud, which seems to be getting worse each year. We think the industry is growing, and that next year there will be more sheep fed than there has been the past season.

S. F. Howard, Long Pine, Brown County:

This county is particularly adapted for sheep, as they keep healthy. Last year I saved every lamb that was dropped except those taken by the wolves. My eight-months lambs brought me $2.50 net. There is a good opening for small flockmasters here, as land is cheap and we can get the finest kind of grazing lands to use free, or can purchase them at $5 per acre. The only drawback to the business is the wolves, but when sheep-raising becomes more general they will cause less trouble. Good stock ewes will command from $3 to $6, according to breed.

F. F. Goodrich, Lee Park, Custer County:

There are not many sheep kept here now, but the outlook is improving, and those who sold off their sheep three years ago are going into the business again. For winter feed I estimate 1 bushel of corn per head and plenty of good hay; salt regularly, plenty of fresh water, and a chance to exercise, which they will do if given an opportunity. To prevent ticks I mix a little sulphur with the salt. In this way I make sheep-raising pay.

Charles H. Brown, Ogallala, Keith County:

No county in the State is better adapted to sheep raising than ours. The two Platte rivers furnish an abundance of excellent water, and the bluff lands can not be surpassed for grazing purposes. Land can be bought for $3 an acre or leased for the taxes. There are about 200,000 Western sheep brought in here each year from Oregon, Utah, Idaho and Wyoming, and in the fall shipped to eastern points to feed. The annual loss from wild animals and exposure will not exceed 3 per cent. Many of our people are poor homesteaders, and are glad to take sheep on the shares, so there is a good chance for the profitable investment of capital here in the sheep business.

Thomas Woods, Harvard, Clay County:

Eight years ago I bought a couple of lambs for pets, and liking them so well I bought a flock of fifty sheep and added to my flock as I could. I have had as many as 700, but not having summer range I found it necessary to reduce the size of my flock on account of a thickly settled neighborhood. My sheep have always done well, never having had any disease among them, and while interested in other domestic animals I find that sheep are more profitable by at least 100 per cent. My lambs, by an imported Hampshire Down ram, are great big, vigorous fellows. Close wool sheep are the best kind for this country.

William H. Seymore, Unadilla, Otoe County:

My experience is that if farmers in the older counties would keep small flocks of 50 to 100 ewes they would pay 100 per cent or more every year, if good, sound judgment be used in caring for them. I invested $30 in sheep two years ago, and have sold and eaten $94 worth, and have sheep, lambs, and wool now worth $100. If the farmers of Nebraska and Kansas knew more of the value of sheep they would keep a great many more. Mutton will be in greater demand when its value as a food product becomes better known. Broiled mutton would not hurt a Christian if properly cooked. If New England farmers had five million sheep instead of two million dogs their land would be worth double what it is to-day.

Robert Taylor, Abbott, Hall County:

Have had but two years' experience in feeding in this State. My object was to find an outlet for culls and surplus stock off the range. I have 20,000 stock sheep on range in Wyoming and western Nebraska, of which 12,000 are out on shares. We have a certain surplus each year, consisting of wethers, cull ewes, and lambs, and these I concluded to feed myself, and so get all there was in it. Last year, with high prices of feed stuffs and low markets in spring, there was nothing made at it,

but this season they are making good money. I bred 1,800 broken mouthed ewes to Shropshire rams and raised 1,400 lambs. These lambs came in June were put in feed yards November 20, 1891, and on full feed January 1, 1892. These were nearly all shipped by last of March and weighed from 84 to 95 pounds, and brought the top of the market right along at 7 cents, except one load on an off market at $6.75. These ewes I fed averaged 112 pounds, and wethers 140. While it would pay to shear wethers shipped late, we do not, as we are not fixed for it.

John Holman, Humboldt, Richardson County:

I keep the Cotswold and Southdowns, and raise about 200 lambs each year; keep them until they are yearlings, taking their fleeces off about the 1st of June. The Cotswolds shear from 12 to 13 pounds and the Southdowns from 9 to10 pounds of unwashed wool, which sells from 19 to 22 cents per pound. If the market suits I ship to Chicago about two weeks after shearing; if not I keep and feed the following winter, selecting the best ewes to replenish my breeding flock. I sell a good many to farmers. I sell by the pound, as men in this county are accustomed to buy sheep worth about $2.50 to $3 after weaning time, that in no other way can they be convinced that ewes are worth from $6.50 to $8 per head. For farmers the large mutton breeds and medium wools are the most profitable. The middle wools sell for a higher price; they stand the changes of climate better. With breeding ewes I feed very little grain, with plenty of good roughness, and turn out in the pasture whenever the weather admits, to insure plenty of exercise. The sheep I shipped in March, 1892, including some lambs less than a year old, averaged 145 pounds, and brought $6.75 per 100 pounds, an average of $9.85 per head.

MISSOURI.

The State of Missouri possesses a peculiarly advantageous geographical and climatic position for both stock raising and farming. The State is not subject to extremes of heat or cold, and the growing season for vegetation is quite extended. Almost every agricultural crop grown in this country is produced in Missouri, which assures an abundance as well as a great variety of stock feed during the four or five months of the year when the native tame grass pastures fail.

Missouri now ranks fifth in population in the United States, having a population in 1890 of 2,619,184, an increase of a little over half a million during the last decade. By reason of the large urban population in the State, and its great and diversified agricultural resources, the farmer has local and natural advantages second to no other. With Kansas City on her western border and St. Louis on her eastern, both within the confines of the State and both being leading grain and live-stock markets, the farmer and stock-raiser have the benefits derived from a large home demand.

The extent of the State in length, north and south, is 275 miles; average breadth, about 245 miles; area, 69,415 square miles, or 44,425,600 acres, almost equal to that of the combined six New England States. It is divided into 114 counties. That part of the State which lies north of the Missouri River consists of rolling or level prairies, with deep river valleys and much swamp land along the river banks. The southern division, which is much the larger of the two, is more broken and rugged, with a number of hills ranging from 500 to 1,000 feet in height, and

mountain ranges—the Iron and Ozark mountains—in the extreme south. The uplands cover more than half this section. West of the Ozark region the prairies are undulating, and the valleys of the rivers both wide and deep. The principal rivers are the Mississippi, which washes the entire eastern boundary of nearly 500 miles, and the Missouri, which enters the State at Kansas City and flows east and southeast until it unites with the Mississippi a few miles above St. Louis. Both rivers have numerous tributaries within the State.

The range of temperature is great, and the climate is subjected to frequent changes. The summers are hot, and the winters short, but not severe. The annual mean temperature of the State is 55°; that of spring, 56°; summer, 76°; autumn, 55°; and winter, 39°. Southerly winds predominate, and the annual rainfall is about 32 inches, the greatest precipitation being in May.

The State contains much rich land, well adapted to the growth of the cereals. The bottom land of the southeastern counties and the uplands of the north and northwest are remarkable for their fertility, yielding from 40 to 80 bushels of corn per acre, and in exceptional years even exceeding these figures. The extensive prairies of the north and west afford excellent pasturage, but have comparatively little timber. The southeast is heavily timbered.

As showing something of the bountiful resources of the State, I quote from the report of Willard C. Hall, labor commissioner, a summary of the surplus commodities marketed during the year 1890, as follows: 685,585 head of cattle, 1,965,614 hogs, 70,664 horses and mules. Sixty-four counties marketed 224,246 head of sheep, valued at $3.75 per head. Of farm products: wheat, 8,407,000 bushels; corn, 6,898,620 bushels; oats, 5,375,400 bushels; and 124,182 tons of hay.

J. B. Bothwell, Breckenridge, Mo., one of the very best and most extensive breeders of Merino sheep, says:

> I have made sheep-raising a specialty for twenty-eight years. I think there will be double the number of sheep in Missouri ten years hence. People are slowly finding out that they pay better than any other branch of farming, and build up the farm in a way nothing else does; but to handle sheep successfully is a trade that must be learned. We have sold more sheep this year than any year before. There has been an unusual demand for breeding ewes at liberal prices, ranging from $4 to $6. Good sheep well handled have always paid in Missouri and always will, but they require more attention and more skill in handling than the average man is willing to apply to them. It is too small a business for most farmers to study up. In fact, there is more to it—more to learn about it—than most men are aware of. But as the country gets older we will do as the people of Europe have done—grow more sheep and fewer cattle and pigs. No doubt, if there were five head of good sheep in Missouri where there is but one now, it would add millions to her wealth in a few years.

The sheep-raisers of Missouri are especially favored over other western States in one respect, and always will be, no matter how many sheep are produced: no grower need ship a pound of mutton or wool out of the State to find a market, for two of the leading live-stock markets of

the country—Kansas City and St. Louis—are both within the borders of the State. St. Louis is now conceded to be the leading Western wool market. The records of sheep receipts and shipments for 1891 for the two cities are as follows: Kansas City received 386,760 head and shipped 178,271; St. Louis received 402,989 head and shipped 277,886. The only time during the past ten years when the receipts and shipments were greater at Kansas City than in 1891 was in 1890. The receipts were greater at St. Louis in 1877 and 1878, and shipments larger only in 1888.

Another important advantage Missouri possesses in addition to home markets are the numerous facilities of both railroad and river transportation for handling the product. A glance at any map will show the transportation facilities possessed by those engaged in farming or stock-raising.

Regarding sheep-breeding, the following, prepared by L. E. Shattuck, of Stanberry, Mo., one of the most successful breeders of pure-bred sheep, is especially valuable for those engaged in Western sheep husbandry. He says:

As with other domestic animals, so with the sheep—the male constitutes at least one-half of the flock in value of reproduction; hence the importance of the flockmaster knowing that he has for a sire that which comes nearest his idea of what he wishes to raise; and here, as with the other domestic animals, to obtain these unaided by pedigree is quite impossible. The principle of breeding is quite as applicable to the one breed as to the other. The sheep that is the most profitable should be the one chosen. There may be selected from any flock of the breeds about one-third, the number of which, if an account is kept, will show standing to their credit more dollars in proportion to their cost and feed than the other two-thirds, because they produce in fleece and offspring that which is more valuable and at better prices. Judicious mating, accompanied with care, has increased the size one-third in the last thirty years; and at the same time the weight of the fleece is greater in proportion. Never should two animals having the same fault or wanting the same quality be mated. For a good size I prefer a mate with all the appearance of the male kind, not fine or feminine in the head or otherwise, and especially in the bone I like him heavy and firm, with strong neck and upheaded, the more vigorous and active the better, and he should always be in good strong flesh. The ewes, too, ought to be kept in good strong condition. A ewe thin in flesh can not produce a heavy fleece or rear a heavy lamb. The sheep, unlike other stock, is kept for two purposes: Its flesh, by many thought to be among the most delicious, and by nearly all conceded to be the most healthful meat food; and its fleece, of which is composed the most comfortable and economical clothing of civilized man. The most successful breeder of the practical sheep is the one who rears the animals from which can annually be taken the largest fleece and most valuable lambs; and the breeder who can furnish the requirements of the times is the one who turns his thoughts into cash.

In this connection I desire to quote from an address on "Sheep Husbandry in Missouri," by Prof. J. W. Sanborn, late secretary of the State board of agriculture, and professor of agriculture in the State Agricultural College of Missouri. The address was before the National Wool-Growers' Association held at St. Louis in 1866:

Too little attention has been paid to mutton. Strictly wool sheep, when bred for wool, unattended by outside sales of breeding stock or pure wool husbandry, has its

natural home over cheap lands and in sparse settlements. Around centers of industry spring up, by a natural law, the mutton on the mutton-wool sheep. The change of market facilities, aided by transportation rates and the decline in wool values, has ushered in new demands in sheep husbandry that we must meet. Good mutton is worth twice as much as the wool it brings, and it is not to be sacrificed to the lesser product. The mutton-wool sheep is much more prolific than the wool sheep, and sends its young to market the first season, and upon the cheapest food grass. We have grown but 5.18 pounds of wool per sheep as an accompaniment of indifferent mutton. We shall increase this amount 50 per cent along with a more rapid march of mutton improvement. Nature developed the sheep on high, dry lands or mountains, in a dry atmosphere, on sweet, varied, nutritious grasses, and gave to it little rebound of character. Art has developed sheep in their higher forms over drained soil or on dry upland hills; has surrounded them with shelter, nourished them with varied and appropriate diet, and watched over their yielding natures with care. Good sheep are the products of the highest agriculture and thrive only with it, pining under neglect as no other domestic animals do. We have exposed the sheep in our State to the burning sun of our prairie sections, while by the strongest instinct they are impelled to seek the protecting company of trees. We have thrust them over our wet plains, to find that their inbred traits will not bend to these unnatural conditions. Aside from the direct mischiefs of wet soil, the character of the grasses grown upon them has not been of the nature required by sheep. Nature has given us conditions favorable to the permanent success of sheep husbandry in this State. The dry hills and pure water of south Missouri and the rolling limestone and blue-grass sections of central and north Missouri are favorable. It is upon limestone soil that sheep have secured their highest development. Our climate is not warm enough to raise the question of the deleterious influence of heat on the amount and quality of the shear. The largest clip per flock that it has been my pleasure to note was taken by a well-known Missouri sheep-breeder, namely, an average of 16¼ pounds for 160 ewes, while the quality of our best wools is hard to beat. While the summers do not depress, the rigors of winter are not so great as farther north, making our latitude favorable.

While nature has highly favored us in most of the great essentials for successful sheep husbandry, she has left to art the work of making the wet places dry, without which we may not hope for the highest success. The other requirements of art in Missouri are shelter, a well-balanced diet, and skill in handling of a high order. The value of sheep in clearing a pasture of weeds and bushes, their clinging to the summit of hills, from whence their evenly scattered excrements nourish the hillsides as that of no other animal do, their double income are oft-told tales, always important and too often unappreciated.

Sheep husbandry will thrive here when we shake off our drifting and shiftless way of handling this interest and establish a well-organized system of management based upon a knowledge of the nature and demands of sheep, and it will not thrive until then. Our best sheep are only artificial products, and will thrive only on the conditions that made them such.

The philosophy of feeding, as applied to domestic animals as a whole, may be summed up as follows, viz: A certain ratio of albuminoids (the muscle-making parts of food) to the carbohydrates and fats (heat, force, and fat-producing materials of food) in foods is most efficient per unit of food given. This ratio of albuminoids to carbohydrates should vary with the age and purpose for which an animal is fed. To feed too little of one or too much of the other results in waste. As foods are complex, varying widely in their ratio of the above nutriment, and the wants of animals are very varied, feeding affords a fine field for the use of intelligence on the part of a farmer. Science teaches that which good observers confirm, to wit, that sheep require finer and more easily digestible foods than cattle. Those of us who are trying to run counter to these facts of nature ought not to feel disappointed if we reap

meager results. Wet grounds grow coarser, more indigestible, and less aromatic and palatable grasses than dry lands do. Upon such lands sheep feed only under necessity. Nor do they take kindly to the coarse hays for a winter feed. The stems of timothy and rank clover are not favored by them. Sheep are more responsive to green food than cattle are. I would advise the use of roots in limited quanties for breeding ewes before yeaning, because they are valuable for all animals before dropping their young, relaxing the rigidity of the muscular system and antagonizing the costive condition that is peculiar to breeding ewes. By such feeding the death rate of lambs and fever and debility of the ewe will be reduced to the minimum. Our dry hay and straw, accompanied by foul water for drink, with the carbonaceous or heating, concentrated food, corn meal, give a tremendous death rate of both ewes and lambs with us in Missouri.

The factor of shelter is an important one, and belongs to the economy of feeding. Boards are cheaper heat-savers than hay is a heat-producer. Shingles are more economical than sheets of water, and a dry bed far better than a couch of mud.

By nature the sheep is unfitted for dampness, and the artificial open-wool breeds particularly are responsive to cold rains, which saturate the wool, afterwards to undergo slow evaporation, thus undermining the health of the animal and bringing on catarrh and other troubles.

GENERAL FACTS ABOUT THE INDUSTRY.

The sheep industry of Missouri is only one of the many and varied resources of the State, and the fact that the industry is of as much importance as it is to-day is owing to the stability of the men engaged in the business. Especially is this so in view of the adverse circumstances and environments which have beset the industry during its entire history. It is a fact, and not mere flattery, to state that the sheep-owners are the best and most successful farmers in the State. They are citizens who would be a credit to any State, and certainly deserve the prosperity they now enjoy. They deserve as a class much more credit than the sheep-owners in most of the farming States of the West, for having sustained the industry against adverse circumstances which almost demoralized it in the other States. During the dark hours of sheep industry they did not, as a class, abandon the friendless sheep; and now that the business is on the up-grade the men who have been faithful to this much-abused domestic animal are in a much better position than those who deserted it.

While there are not quite as many sheep in the aggregate in Missouri as in some former years, yet there are nearly as many flocks. These flocks, though smaller in size, are of better quality. The sheep is a much more profitable animal to-day than it ever was before. The business is confined almost exclusively to the general farmers of the State. There are very few stockmen who make a specialty or exclusive business of sheep-raising. It is rather an essential part of mixed husbandry. While there are sheep in nearly every county in Missouri, the aggregate for any one county is not large. Not one farmer in ten has a flock of sheep. These farm flocks range in size from 10 to as high as 500 head, with a general average of from 50 to 100. The flocks owned by breeders of thoroughbreds are generally much larger, ranging from

about 500 to one or more thousands. The size of the flock depends largely on the amount of land owned, as the only sure thing in the way of pasture is to own land. Therefore the Missouri sheep-owner is a landowner.

The basis of most of the flocks of Missouri are Merinos or the native sheep, although there are now owned in the State pure-bred flocks of all the leading breeds. The greater portion of the sheep of the State, however, consist of crosses or grades. While the number of flocks show but little increase within the last few years, the number of sheep in the State, according to the tax rolls, have increased from 737,878 in 1890 to 831,104 in 1891, notwithstanding the large mutton sales meantime. What is more encouraging is the manifest improvement in the quality of sheep as well as in the care of the flocks. Formerly many of the farmers carried on the business in a sort of haphazard way, without any definite ideas beyond the production of wool. But the business is now being reduced to a system, grades are rapidly breeding up, and other pure breeds are becoming more numerous. The most notable change made by the breeders of Merinos during recent years has been to the mutton standard, and the improvement of the fleece as to length and fineness of staple. The modern Merino is a much more robust animal, larger and smoother bodied, and fully 25 per cent heavier than formerly.

One reason why the industry has declined in some sections of the State is because dogs are too numerous, and another is that land is too valuable to risk with any precarious business. These, together with the low prices of wool and the expense of wire fencing for pasture, are the discouraging drawbacks which serve to explain the decline in some localities and the more rapid development in others. But, notwithstanding the adverse conditions noted, sheep-raising as compared with other branches of live-stock husbandry leads them all, especially where sheep are well handled. The almost unanimous declaration of the flockmasters throughout the State is that sheep when guarded against destruction by dogs, and otherwise properly handled, are more profitable, taking one year with another, than any other class of stock.

There are very few sheep imported except breeding animals for improving the stock, or Western sheep to be finished for the market. Such sheep show neither serious impairment in any way, nor special improvement in consequence of the change of location.

The common mistake made by farmers in the past was breeding for wool and grease, leaving the carcass to decrease in size and the constitution of the animal to become impaired. The tendency at present with many farmers is to make a similar mistake in the opposite direction—in breeding too much for size and disregarding wool qualities, instead of giving equal attention to both wool and mutton.

In the selection of breeding animals the Merinos are not used nearly so exclusively, and not at all unless they are of large size, well wooled,

and of robust constitution. The mutton breeds are very much more popular, and there is great demand for the Cotswold, Shropshire, and Southdown bucks. The age of service rams ranges from one to seven years, although the preference of experienced sheep-owners is for bucks from two to five years old.

There seems to be quite a diversity of opinion among sheep-owners as to the proper time of breeding, number of ewes given each ram, and the length of time he should remain with the flock. The month preferred is October or November, although some breed as late as December and others as early as August and September. The early breeding, however, is confined mainly to those who make a specialty of raising lambs to come early. The number of ewes given to each ram depends somewhat on the breed, the condition of the animal, and the care given him during the breeding season. The best breeders recommend the hand-breeding system, the same as with horses, in order to secure better results and double the service. The length of the breeding season depends somewhat on the size of the flock and method used, ranging from fifteen to sixty days. The number of ewes that fail to breed is generally quite small, except in cases of bad condition of the animal or careless management. The per cent of lambs raised is now larger than formerly, owing to better care and more suitable conveniences, although where the flockmasters are indifferent the per cent ranges from 50 to 90. More experienced and careful sheepmen generally average 90 per cent or better.

The usual time for shearing sheep in Missouri is during the month of May, although a great many flocks, especially the pure-bred, are shorn during April. There has been no special improvement in the mode of shearing sheep. The old plan is still in vogue. The smaller flocks are shorn by the owners, while for the larger flocks experienced shearers are engaged at about 5 cents per fleece. Each fleece is tied up singly, and either stored away in a dry place or sacked ready for shipment. The majority of the sheep-owners sell the wool unwashed as it comes from the back of the animal. Some few who have a very small flock tub-wash the wool before selling it. Where it is possible for the sheep-owner to sell his wool at home it is always done, provided the price offered is at all satisfactory. The bulk of the Missouri clip, however, goes to the St. Louis market, and is generally sold to traveling representatives of St. Louis wool dealers or commission men. Quite a number of clips which are uniform every year are sold to woolen-mills in Missouri and Illinois. The average weight of fleeces, which ranges all the way from 4 to 15 pounds, are of the various grades and breeds of sheep. Perhaps a general average is from 6½ to 8 pounds. The general grade of wool produced ranks in the order of medium, fine, and coarse. The class of wool produced generally is much sought after in the markets, especially when prepared in merchantable shape and free from vegetable matter and burs. A very small portion of the clip of

the State goes to the Eastern markets unless reshipped from St. Louis. The growers generally prefer to take their chances in the home market unless satisfactory prices are offered by buyers direct from Chicago or Eastern markets. The range of prices received by the growers for the various grades of the last clip was from 15 to 27 cents. The marketing of the wool by the grower is always a perplexing and unsatisfactory business. There seems to be no uniform sorting and grading of wool by the men who usually handle it, and the cost to the grower from the time it leaves his hands until he receives returns varies greatly, and is so much higher than other agricultural products that it causes general dissatisfaction. This arises no doubt from the lack of uniformity and generally indifferent manner of preparing the wool for market. Too many sheep-owners permit their sheep to run in the fields and get the fleece filled with burs. Another disadvantage is the scarcity of Western woolen manufacturers, which generally leaves the volume of business of handling wool to dealers and speculators, making the wool-growers feel that they are largely the prey of the middlemen, who stand between the grower and the manufacturer.

Since the mutton product has become profitable to sheep-raisers a considerable portion of the flock is annually disposed of in sales of wethers and lambs. The average for the entire State represents about one-third of the flock. Heretofore a good many breeding ewes could be picked up among the farmers and breeders at reasonable prices to be shipped to other States west, but at present the local demand from farmers who desire to engage in sheep-raising readily takes what is offered in this way. In former years the average gross weight of sheep sold for mutton seldom exceeded 100 pounds, but various reports received from different parts of the State show the average for the past year to have been 123 pounds.

Flockmasters and farmers differ greatly in their estimates as to the cost per sheep per year. The extreme prices reported are from 25 cents to $2. In fact, very few seem to have any definite idea as to the cost. Quite a number of farmers who have 25 sheep or less say that it does not cost anything, or at most 25 cents per head; while the owners of flocks of 100 or over, where the lambs do not come until after April 15, say that the total cost is from 50 cents to $1 per head, which is probably a conservative estimate for the entire State.

In considering the local disadvantages and obstacles encountered in sheep husbandry in Missouri, the one thing that overshadows all others, and is, in fact, the greatest enemy to this industry, is the constant ravages and annual devastation of the flocks by dogs. Perhaps in no other State west of the Mississippi River, excepting Arkansas, is there such a universal complaint in this particular. Of course there are other local disadvantages, such as permitting the ram to run with the flock the entire year, and, as a consequence, causing many lambs to come too early, entailing unusual losses. Then, too, there is a consid-

erable loss in many portions of the State, especially in the wooded districts, from wolves and foxes. In some portions of the State the extreme wet weather causes much discomfort if not loss to flocks. Wire fences add an additional expense and should also be set down as one of the hindrances.

Among the natural advantages of the industry to be considered is the central geographical location of the State. It is one of the most productive agricultural regions of the country. The population of the State is large and the local demand for mutton products is good. Its proximity to the principal live-stock and wool markets of the country is of great advantage to the industry. The greater portion of the surface of the State is gently rolling, well-drained land, with plenty of timber, shade and natural protection from wind and storms. The water supply is excellent, because it comes largely from wells in the sections of the country where sheep are now being raised. Not many sheep are kept along the principal rivers, as such localities are not considered suitable for sheep, nor is the water from the larger rivers very good for such stock. Almost every variety of tame grasses and the different cereals are easily produced in every portion of the State. Outside of cold and wet winters and early springs, the climate is very good and well adapted to sheep-raising.

Generally speaking, there are no serious complaints as to the health of sheep, at least not to such an extent as to be considered a drawback. The only ailments reported are grub in the head, and trouble with scours or worms with the lambs. Occasionally a case of scab is heard of in the fall of the year.

Of late years very little loss is reported from destruction of sheep by wild animals, except in the extreme southern portion of the State, where the country is thinly settled. The loss from exposure is generally light, except where they are poorly cared for or practically neglected altogether. The only general source of loss throughout the State is ravages of dogs. That the annual loss of sheep is not much greater throughout the State is something wonderful, because so many men have been exceedingly careless in their management of sheep. But since they have come to be regarded as more valuable they are receiving much better treatment and care. Suitable shelter and better accommodations are now provided, and if the growers could only make a united effort to secure the necessary State legislation which is due the industry, the future outlook would be greatly improved. Probably the best method for conducting the industry in Missouri is for the farmers to keep smaller flocks in connection with other stock and general farming, and avoid handling more than one breed, keeping as nearly as possible to the pure-bred. The matter of cross breeding is something to be deplored, especially in farmers' hands. As a rule, it is best to breed so that the lambs will come by the time the pastures are ready for use. In other words, if the farmers of Missouri would handle sheep

in the same way as they do horses, cattle, and hogs, giving them the careful attention they deserve, they would undoubtedly succeed in the sheep business, and soon realize that it is one of the most profitable branches of general farming.

NUMBER, VALUE, AND DISTRIBUTION OF SHEEP.

At the present time the number of sheep owned in Missouri exceeds 1,000,000 head, valued at $3,250,000. The wool clip for 1892 will be over 7,000,000 pounds, valued at $1,500,000. The mutton sales will aggregate $1,000,000 more, and the lamb crop for 1892 will represent a total value of $1,000,000, so that the total value for 1892 of sheep and their products will be about $7,000,000. If the value of other property belonging or pertaining to the industry, such as barns, sheds, yards, and permanent conveniences, as well as pasture lands, etc., be added, the total value represented by the sheep industry of Missouri is not less than $20,000,000.

A table compiled from a late report of the Missouri State Board of Agriculture shows the number of sheep in each county in the State, excepting Scotland and Ozark, for the years 1890 and 1891. The counties are classified by districts. The total increase over 1890 is also shown. The table is compiled from the report of Levi Chubbuck, secretary of the Missouri State Board of Agriculture, and is as follows:

NORTHWESTERN COUNTIES.

	1890.	1891.	Increase.	Decrease.
Andrew	2,274	2,555	281	
Atchinson	1,921	1,670		251
Buchanan	1,928	2,460	532	
Caldwell	17,485	21,382	3,897	
Carroll	2,751	3,168	417	
Clay	5,111	6,115	1,004	
Clinton	5,793	6,109	316	
Daviess	12,045	16,248	4,203	
De Kalb	3,104	3,568	464	
Gentry	8,265	9,322	1,057	
Grundy	13,980	13,945		35
Harrison	12,194	9,998		2,196
Holt	428	631	203	
Jackson	8,158	7,767		391
Lafayette	3,837	4,974	1,137	
Livingston	13,499	14,171	672	
Mercer	7,179	6,116		1,063
Nodaway	3,317	3,048		269
Platte	2,275	3,374	1,099	
Ray	6,788	8,764	1,976	
Worth	3,874	4,977	1,103	
Total	136,206	150,362	18,361	4,205
Net increase			14,156	

NORTHEASTERN COUNTIES.

Adair	5,404	5,314		90
Audrain	14,570	21,640	7,070	
Clark	6,499	7,327	828	
Knox	5,020	6,069	1,049	
Lewis	11,593	13,909	2,316	
Lincoln	8,385	8,694	309	
Linn	7,971	9,201	1,230	
Marion	9,704	11,278	1,574	
Macon	9,169	11,637	2,468	
Monroe	18,576	26,856	8,280	
Montgomery	7,630	7,668	38	

NORTHEASTERN COUNTIES—Continued.

	1890.	1891.	Increase.	Decrease.
Pike	13,167	13,670	503	
Putnam	10,745	12,610	1,865	
Ralls	7,433	7,570	137	
Schuyler	23,890	28,658	4,768	
Scotland, no returns.				
Shelby	13,269	12,160		1,109
St. Charles	5,014	6,222	1,208	
Sullivan	9,123	9,529	406	
Warren	5,353	5,497	144	
Total	192,515	225,507	34,191	1,199
Net increase			32,992	

SOUTHEASTERN COUNTIES.

Bollinger	7,894	9,883	1,989	
Butler	1,001	1,019	18	
Cape Girardeau	8,869	9,862	993	
Carter	553	598	45	
Crawford	8,935	9,252	317	
Dent	10,202	11,212	1,010	
Dunklin	691	874	183	
Franklin	7,407	8,343	936	
Gasconade	5,234	5,379	145	
Howell	5,849	7,063	1,214	
Iron	2,193	2,100		93
Jefferson	5,876	6,530	654	
Madison	3,425	4,444	1,019	
Mississippi	229	487	258	
New Madrid	512	576	64	
Oregon	3,445	2,715		730
Perry	7,519	8,096	577	
Pemiscot	334	355	21	
Reynolds	4,783	5,118	335	
Ripley	3,089	3,247	158	
St. François	2,317	3,624	1,307	
Ste. Genevieve	2,689	3,065	376	
St. Louis	2,167	2,590	423	
Scott	650	328		322
Shannon	1,789	1,672		117
Stoddard	2,469	2,501	32	
Texas	11,193	13,693	2,500	
Washington	3,857	4,789	932	
Wayne	3,983	4,493	510	
Total	119,154	133,908	16,016	1,262
Net increase			14,754	

SOUTHWESTERN COUNTIES.

Barry	6,593	6,417		176
Barton	3,595	3,682	87	
Bates	3,367	3,917	550	
Cass	3,433	3,825	392	
Cedar	4,147	4,387	240	
Christian	3,355	3,954	599	
Dade	4,410	4,279		131
Douglas	4,963	6,982	2,019	
Greene	5,187	5,633	466	
Henry	2,936	2,560		376
Jasper	5,023	2,840		2,183
Johnson	5,184	6,605	1,421	
Lawrence	3,660	3,551		109
McDonald	5,272	5,861	589	
Newton	2,945	2,587		358
Polk	9,503	10,863	1,360	
St. Clair	4,544	4,962	418	
Stone	2,549	2,920	371	
Taney	1,844	2,589	745	
Vernon	2,334	2,548	214	
Webster	9,420	11,531	2,111	
Wright	9,327	11,363	2,036	
Total	103,591	113,876	13,618	3,333
Net increase			10,285	

CENTRAL COUNTIES.

	1890.	1891.	Increase.	Decrease.
Benton	6,857	7,662	805	
Boone	9,855	13,011	3,156	
Callaway	20,344	21,518	1,174	
Camden	5,341	6,730	1,389	
Chariton	6,990	8,134	1,144	
Cole	3,562	7,904	4,342	
Cooper	15,814	12,443		3,371
Dallas	7,631	9,067	1,436	
Hickory	5,849	6,708	859	
Howard	11,271	11,946	675	
Laclede	5,812	7,309	1,497	
Maries	8,196	10,175	1,979	
Miller	9,617	10,746	1,129	
Moniteau	6,603	7,348	745	
Morgan	8,830	10,052	1,222	
Osage	7,770	8,965	1,195	
Pettis	10,368	12,267	1,899	
Phelps	8,389	9,223	834	
Pulaski	5,208	5,952	744	
Randolph	15,291	12,220		3,071
Saline	6,814	8,071	1,257	
Total	186,412	207,451	27,481	6,442
Net increase			21,039	

SUMMARY.

District.	1890.	1891.	Increase.	Decrease.
Northeast	192,515	225,507	34,191	1,199
Northwest	136,206	150,362	14,156	
Southeast	119,154	133,908	14,754	
Southwest	103,591	113,876	13,618	3,333
Central	186,412	207,451	21,039	
State	737,878	831,104	93,226	

Sheep increased 93,226 head between the last two assessments, and 35,782 head during the previous year. Up to that time there had been, since 1882, a decrease in the number of sheep in the State. The assessment of 1882 showed 1,798,625 head in the State, and that of 1889 702,096, a falling off of 1,096,529 head.

Hon. Levi Chubbuck, secretary State board of agriculture, has recently compiled a tabulated report showing the prices received by the producer during the three years from June 1, 1889, to September, 1891. The following counties are taken as representative ones in each section of the State, showing the average prices received for each year for sales of mutton and wool:

Representative counties.	Sheep for slaughter per 100 pounds.			Lambs for slaughter per 100 pounds.			Wool, medium, per pound.		
	1889.	1890.	1891.	1889.	1890.	1891.	1889.	1890.	1891.
Adair	$3.36	$3.70	$3.44	$4.25	$4.54	$4.08	$0.23	$0.24	$0.24
Nodaway	2.75	2.82	3.36				.17	.19	.18
Cape Girardeau								.23	.24
Barton							.20	.20	.18
Laclede	3.07	3.19	3.86	4.17	4.10	4.92	.35	.33½	.33½
Boone	2.69	2.93	3.72	4.00	4.75	5.25			
Average for State	2.97	3.21	3.60	4.13	4.46	4.75	.21	.24	.23

The foregoing tables, compiled from official State reports, are very valuable as showing the increase or decrease of the sheep industry of the State.

For the last thirty-two years the actual number of sheep in the State has not been less than a million head, and at no time much in excess of a million and a half. The periods when the number of sheep reached the maximum number was during the years from 1869 to 1874, and 1880 to 1884. At present sheep are of a better class and the total value is greater than ever before in the history of the industry in the State.

THE ST. LOUIS WOOL MARKET.

The St. Louis wool market is now considered one of the best in this country for domestic wool. It has grown in favor with the growers from year to year, and to-day ranks second as a market for domestic wools.

The St. Louis Market Reporter says that the number of dealers, brokers, and agents located there is now larger than ever before, many of them in order to be in the acknowledged leading primary market having established their headquarters in that city in the past year. This, of course, will stimulate the competition for the offerings of wool, and, in turn, secure to the seller a higher price than he could obtain by disposing of his clip in any other way or at any other place. This market has several advantages, the greatest being the energy displayed by the commission merchants and dealers who handle the staple to increase the volume of trade and to insure the best possible results to shippers. Consignments are always salable on day of arrival, and returns as a rule are made then and there, while the charges are reduced to a minimum. Besides, large stocks are carried the year round, which attract manufacturers and investors from all sections. They can compete successfully with seaboard markets, for the reason that goods shipped to Eastern manufacturers go direct to their mills, at Boston or New York rates, instead of going to these points and then incurring the expense of reshipment.

The Western manufacturing trade is also a large factor. Probably one-fourth of the receipts here is used for home consumption. Besides, the Western manufacturer is reputed to be a more liberal buyer than his brother of the East. St. Louis is now (with but a single exception) the largest market for domestic wools in the United States, and is steadily and surely growing as the distributing point for Western wool. The amount handled here in a season is very large. Utah, Montana, Wyoming, Colorado, New Mexico, etc., have been heavy shippers to this point of late, and while this is the principal market for the growth of the Western and Southern States, it also receives many clips from the north.

The last annual report of the St. Louis Merchants' Exchange gives the following regarding the business for 1891:

Receipts of wool for the year were the largest on record, and the shipments exceeded by only two years, 1885 and 1890. As the numbers of sheep decrease nearly one million head in the country at large, the receipts were very gratifying to the trade, and prove the growing importance of this as a central distributing market. The wool industry of the country was disappointing, owing to excessive importations of Australian wool, but our market never at any time of the year exhibited as manifest signs of depression as did the markets in the consumptive districts. Prejudices which have existed in the Territories against this market are rapidly dissipating, and this is growing as a distributing market for western wools. The stocks on hand at the first of this year (1892) were 7,130,000 pounds, and since then quite a number of notably heavy transactions have been consummated. Those engaged in the wool trade seem confident that all the stocks on hand and stocks to come during the season will be absorbed.

Receipts and shipments for thirteen years.

Year.	Wool.		Hides.	
	Receipts.	Shipments.	Receipts.	Shipments.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*
1891	21,975,954	21,464,552	34,744,949	39,487,722
1890	20,540,503	23,226,444	28,245,828	38,838,760
1889	21,018,920	18,239,236	29,732,042	36,445,038
1888	19,626,629	21,463,998	31,814,049	40,296,581
1887	17,347,188	17,392,858	26,175,972	31,476,338
1886	18,563,614	17,825,630	19,978,698	23,407,160
1885	21,193,031	25,145,815	20,864,833	25,386,095
1884	12,391,806	17,665,858	16,305,415	21,707,724
1883	18,868,729	20,903,974	17,453,244	20,806,930
1882	16,019,836	14,845,897	22,135,538	26,744,094
1881	11,198,272	9,817,534	20,079,814	28,088,636
1880	12,387,089	10,492,524	18,436,253	24,114,529
1879	20,786,742	19,619,258	20,042,734	26,719,928

Receipts of peltries and furs.

Year.	*Bundles.*	*Year.*	*Bundles.*	*Year.*	*Bundles.*
1891	125,526	1885	17,474	1879	10,683
1890	78,838	1884	15,459	1878	10,439
1889	43,316	1883	15,591	1877	12,368
1888	45,332	1882	18,089	1876	14,508
1887	22,045	1881	16,115	1875	16,587
1886	18,889	1880	12,037		

DISASTROUS DOG DEPREDATIONS.

A report of the Missouri sheep industry would be incomplete without a discussion of the greatest hindrance to sheep husbandry ever known in the State, viz, the disastrous depredations of dogs. This worthless animal has been a constant menace to the business, and has done more toward retarding the growth of the industry and decimating the flocks than all other sources combined. A Wisconsin flockmaster has well said that the sheep industry in thickly settled States is profitable in proportion to the quantity and quality of the dogs kept in the community. And the intelligence of a community is rated according to the conspicuous absence of dogs.

In a recent editorial Colman's Rural World says:

Missouri has owned more sheep than it does to-day, but never was in a better condition to take hold and build it up to greater proportions than ever. Nothing in the world is preventing our farmers from going into the business on a large scale but the night-prowling, wolfish dogs, and most certainly they should be denied the privilege of limiting and retarding the development of so great and important an industry. This evil out of the way, the farmers would at once stock up with flocks proportioned to the size of their farms and their means, and make Missouri a mutton and wool producing State second to none in the country. The uncertainty of wool values in the past is now remedied by the certainty of a first-rate market for mutton and lambs, both of which are to-day paying better than beef and have a more certain and better settled market. With a fair-sized flock of graded sheep one has something he can realize on any month in the year, besides his wool returns early in the spring before he begins farm work proper.

An experienced writer in the American Agriculturist says:

The one great drawback, however, and it exists in all thickly settled countries, is the ravages of worthless curs. Two or three dogs in a single night will destroy good sheep and lambs enough to offset the greatest prospective profit for an entire season. If there is any one evil that requires more stringent legislation than another it is the dog nuisance. There is hardly any family so poor as not to be rich enough to own a dog, and the pleasure and comfort of that useless cur they will protect by every means possible, always ready to deny the possibility of any injury by their dog. One of the best means for protecting the flock against the attacks of dogs is by using a liberal number of bells. If the flock numbers forty or fifty, at least a quarter of them should have each a small bell, and as noisy a one as possible, attached to her neck. If the flock is small a greater proportion should possess bells. The reason why bells are a good protection is because sheep-killing dogs are naturally sneaks. They are afraid of detection, and the noise created by a flock of sheep wearing bells will cause them to desist. I have never known a flock of sheep wearing bells to be injured by dogs. We need more stringent laws for the protection of sheep.

In all of the agricultural States the sheep-owners are clamoring for an effective law that will lessen the depredations of dogs and furnish suitable indemnity to those whose stock shall be injured by them. These worthless curs range from farm to farm and are frequently the agents for the dissemination of contagious diseases among sheep and other stock. Dr. Cooper Curtice, in his "Animal Parasites of Sheep," says:

The relation of the dog to sheep husbandry is too important to be overlooked. Were it not that the definition of parasites excludes such animals as can be considered beasts of prey, the dog would be placed at the head of the list of parasites, as being the most destructive. Though this be unmistakably apparent to a large majority of sheep-owners there are many who believe that the dog is man's most faithful friend and that he is of great use even on a sheep farm. It is unfortunate for the dog that the mass of testimony on this subject is against him. It is not from the standpoint of the dog as a beast of prey, however, that this work is written, but it is from the more technical standpoint of the dog as a carrier of parasites dangerous to sheep and man.

The Ohio Farmer says the total damage to sheep by dogs in that State last year was $152,034, notwithstanding the precautions taken by the flockmasters to prevent loss.

The author of this report gives the following extracts from letters received from Missouri sheep-owners regarding dogs:

R. B. Ekey:

I have raised sheep all my life, and like the business, except when dogs get at them and kill from 15 to 20 sheep in a single night. If we had a good dog law there would be 10 sheep where now there is 1.

P. S. Alexander:

Dogs are the great drawback to the industry.

Dillon Bros.:

The future of the sheep industry is dark and getting darker on account of the rapid increase of dogs, and a man dare not shoot one for fear of a lawsuit. Eight flocks have recently been raided by dogs in this vicinity. Some are trying the strychnine cure, and some hundred or more dogs have died in the last two weeks.

James L. Dawson:

Sheep-raising is on the decline, owing to the ravages of dogs.

The foregoing expressions are samples of scores of others similar to them. The public sentiment, based upon common interests, demands the death of every sheep-killing dog, and the passage of a law which will insure future immunity from their depredations. It is next to an impossibility to keep dogs and sheep successfully in the same location. Which must yield?

At a low calculation I estimate that the annual losses of sheep in Missouri each year amounts to $200,000 from such depredations, to say nothing of losses in other ways. The loss is not only burdensome to to the owner, but the State is deprived of that amount of taxable wealth.

EXPERIENCE AND VIEWS OF MISSOURI SHEEP-OWNERS.

No one is better qualified to discuss the merits of sheep husbandry from a Missouri standpoint than those who have had years of experience, hence I have collated from a very large and recent correspondence with the sheep-raisers testimony regarding the industry that can not fail to give the reader a clear and comprehensive view of the condition and possibilities of the business in this State from the standpoint of practical and experienced sheepmen. Nearly every portion of the State and almost every phase of the industry is touched upon by the following correspondence:

John Morris, Chillicothe, Livingston County:

I commenced the sheep industry in 1866 with a small flock, and have found them the most profitable of any kind of stock. I now keep from 1,000 to 1,200 head. This is a good State for the business, and with a careful man the future is bright. However, I find that there is only about one man in twenty that is capable of taking care of sheep.

Judge R. F. Ayres, Louisiana, Pike County:

Have been actively engaged in sheep husbandry for the past six years. Began with common native ewes and used a pure-bred Southdown buck for five years. The past year I bred a thoroughbred Oxford Down ram with these Southdown grades.

Lambs are now coming, showing wonderful results. There is no species of live-stock industry so profitable, according to my experience, as that of sheep, the future of which in Missouri I regard as promising.

John S. Crow, Paris, Monroe County:

Have been raising sheep ever since I began farming, nearly forty years ago, and regard a small flock more profitable than any other stock. My sheep yield me from $5 to $6 per head yearly.

P. S. Alexander, Lone Jack, Jackson County:

Sheep have paid me as well as, if not better, than any other stock. I only keep from 80 to 100 head, as they do better in small flocks. As fertilizers, they have no equal.

O. C. Roby, Mexico, Audrain County:

Was raised on a sheep farm in Ohio, and have been in the business all my life—forty-five years. Handled sheep in Kansas and Missouri. I now have 1,500 head. If we only had a good dog-law Missouri would soon be the great sheep State of the country.

C. H. Canthorn, Laddonia, Audrain County:

Have handled a few sheep all my life, and they have always paid better than any other investment. I keep Cotswolds, and last season 200 ewes dropped 330 lambs and raised 295. I never sell a young ewe unless it is one I do not like. I cull every year, and sell whether I can get my price or not. A ram should not run with the flock during the breeding season, but should be well cared for. With such treatment he can serve 150 ewes as well as 50 while running with the flock.

W. H. Gist, Bridgeton, St. Louis County:

Have followed the business for thirty-five years, and think it one of the most profitable and delightful departments of the farm. The products of the flock meet two needs of the human family. There is a growing demand for mutton, and woolen fabrics are indispensable. I believe that Missouri can not be surpassed in her adaptation to sheep-growing.

Wm. Johnson, Benton City, Audrain County:

Have handled sheep for thirty years—twenty years in Ohio and ten years in Missouri. Have used mostly full-blood Merinos, and they have been the principal source of revenue in my farming. If people could be educated in sheep husbandry the industry would have a flattering future.

J. D. Parks, Holden, Johnson County:

Have followed the business for five years in Missouri, and have made about 50 per cent on the investment. Also five years in Kansas, where I started in 1876 with 1,000 ewes, worth about $2,500. Sold out in 1881, after paying all expenses, for $14,000. Think sheep husbandry, properly handled, in Missouri will soon pay 50 per cent profit.

William Riley, New Madrid, New Madrid County:

I think if our legislature would enact laws that would annihilate the overplus of worthless curs, it would greatly help the sheep industry in this State.

H. Clay Jackson, Ulmon Ridge, Miller County:

I have experienced some reverses from dogs and low prices of mutton during the twenty-five years I have been in the business, but have stuck close to sheep and made more money from them than from mules, cattle, or hogs.

H. B. Scott, Sedalia, Pettis County:

My experience in sheep husbandry for the past few years has been very satisfactory and profitable, although I have only kept a small flock of thoroughbred Shropshires for breeders. If prices are not disturbed by legislation the industry in this State will become more popular.

J. J. Brigal, Marden, Callaway County:

Have had eight years' experience in sheep husbandry. The future is quite flattering in view of the fact that we expect never again to see our sheep go as low in price as heretofore, and we shall endeavor by care and attention to make this the foremost business of our great State. Our farms are renewed, and much of the old land would become worthless without the sheep's foot, which is gold to the soil.

J. B. Murchany, Dardenne, St. Charles County:

Sheep-raising is a success from beginning to end. A few head on the farm will always pay 100 per cent. I have just shipped a lot of yearling lambs that weighed 120 pounds in St. Louis, and brought $6 per head. The lambs never saw any grain except what they got in the stubble field. They were wintered on clover hay. A neighbor of mine raised 64 lambs from 45 Shropshire ewes, the best record I ever knew.

Thomas McNallie, Sarcoxie, Jasper County:

Have had sixteen years' experience in this county. I started with less than 20 head, taking them on shares, and at end of the year bought the flock, and as there was unlimited range near I kept buying until in three years I had 400 head. My first mistake was in selling a car of the fattest each year after shearing, and breeding the ewes without weeding out the aged and inferior. Another mistake was in breeding my ewes to a Leicester ram instead of using a Merino or Down ram.

W. B. Cox, Oto, Stone County:

I have been familiar with sheep-raising for forty years, and since 1870 have kept from 100 to 300 sheep here, but four years ago reduced my flock to 60 head. I now keep a better grade of sheep, and pasture them most of the time. Sheep, like other stock, require plenty of feed and good care, in order to be profitable. This county is well adapted to the business.

William Cully, Cherry Box, Shelby County:

I find the best results from breeding from aged bucks, as the lambs are stronger and make larger sheep. Bucks should never be in a flock more than two seasons. In this county sheep-raising is on the increase, and more attention is being paid to raising improved breeds.

H. M. Vaile, Independence, Jackson County:

My experience with sheep has been pleasant, except for dogs. Some years ago I imported some superior Lincoln sheep and used them on grade Merinos. The cross has made a superior mutton and at the same time a wool sheep, bearing the highest price fleece. In body they are sound, low and strong, the wool long, even, glossy, and fine; both body and legs well wooled. I regard this cross superior to all others.

KANSAS.

Kansas has now a population of 1,500,000 and an area of 80,891 square miles, or 51,770,240 acres, with hardly a single acre that can not be utilized either for grazing or farming. There is no land, except that

under cultivation, that is not well covered with a great variety of nutritious native or tame grasses.

The State has an extent of 400 miles from east to west by 200 in breadth. Its average altitude above the sea level is not far from 2,375 feet. The highest portion is in the extreme northwest, and is about 4,000 feet. The rivers drain the country in a southerly and easterly direction. The surface for the most part is a gently rolling prairie, with few steep hills or bluffs, and the ravines are not often precipitous or deep. The soil of both valley and high prairie is about the same—fine, black, rich loam, so common in the Western States. On the high prairies it is from one to three feet deep, while in the bottoms it is often twenty feet. The soil of the upland prairies is generally a deep rich clay loam. In the bottom lands near the streams the soil is black sandy loam; the second bottom—that is, the land between the uplands and the valleys—is composed of a rich and deep black loam, with very little sand. All of these lands are free from stones, easily cultivated, and very productive. The State is well drained; there are very few stagnant ponds, and not a swamp of 50 acres within its borders. The soil and climate, the native and tame grasses, all seem to combine in adapting Kansas for the highest development of the sheep industry.

As the country has become settled and cultivated the short buffalo grass which originally covered the prairies has given place to the tall blue-stem and other bladed grasses, and in many places various tame grasses and forage plants, valuable particularly for hay, such as timothy, blue grass, clover, and alfalfa. Not only do the valleys, but the average uplands also, produce heavy crops of corn and vegetables. The uplands are specially adapted to the production of wheat, oats, and other small grains, and to the culture of fruit.

Kansas is well supplied with rivers and creeks. On the eastern border the Missouri presents a water front of nearly 150 miles. The Kansas is formed by the junction of the Republican and the Smoky Hill rivers, and from the point of confluence it flows east about 150 miles to the Missouri. Lateral valleys on the north are formed by the Saline, Solomon, and Blue rivers, and other streams. The Osage River rises in the eastern part of the State, and after a southeast course of about 150 miles enters Missouri. The Arkansas has its source in the Rocky Mountains in Colorado. It flows through nearly three-fourths of the length of Kansas easterly and southeasterly, and with its tributaries waters two-thirds of the western and southern part of the State. Its lateral valleys on the north are traversed by the Walnut, Little Arkansas, Pawnee Fork, and other streams, and on the south by the Ninnescah, Chicaskia, and other fine streams. The Neosho, rising in the central part of the State, flows southeast about 200 miles, receiving in its course the Cottonwood and other streams. The Verdigris runs nearly parallel with the Neosho, receiving Fall River on the west. In the southwest are the Cimmaron and Medicine, which flow for a considerable

distance in the State, and a network of southern tributaries of the Arkansas. These rivers are not navigable, yet with their tributaries they make Kansas one of the best watered of the Western States. In most localities, including the extreme western part of the State, good water is obtained within a reasonable distance of the surface by digging or boring. In some places, particularly in the western counties, artesian wells furnish valuable supplies of water.

Timber is abundant along the streams in the eastern portion of the State. It is less plentiful in the central portion. The varieties of timber embrace oak, elm, black walnut, cottonwood, box-elder, honey locust, willow, hickory, sycamore, white ash, hackberry, and mulberry. The Osage orange makes a rapid and vigorous growth. It is not killed by the winters, and is extensively used for hedges. Stone, being plenty and cheap, is used in dwellings, barns, outhouses, and fences.

Except in certain cases, where the surroundings and equipments are especially favorable, large flocks of sheep will never again be numerous in this State. The demand for ewes by farmers is better to-day than ever before, and is an indication of the tendency of the industry in the future. Sheep-raising will prove especially advantageous to western Kansas, where grain-raising has been, as a rule, a hazardous business, and where many farmers have only limited means. On this subject the Kansas Farmer says:

> Western Kansas is naturally adapted for live-stock raising, owing to its abundant native pastures, pure air and water, and invigorating and healthful climate, and there is no class of live stock that requires so little capital as sheep, so that this branch of the animal industry is within the reach of most of the present residents, and consequently an available business that will give larger returns for the amount of money invested than any other class of live stock. There is no other portion of the country west of the Mississippi that is better adapted in every way for successful sheep husbandry than western Kansas. This is an acknowledged fact, as vouched for by men who have had years of experience in this section as well as other portions of the country; besides, the writer has visited nearly every sheep-raising region of the West, and is more than ever convinced of the truthfulness of the foregoing statement.

NUMBERS AND VALUES.

Official reports of the number of sheep and other live stock for 1891 include only such stock as was assessed for taxation purposes, hence the figures are incomplete, as the number assessed is always short of the actual number, and does not include last year's lambs.

The report of the state board of agriculture for the year ended December 31, 1891, gives the following distribution: The counties having 10,000 head of sheep and over are Butler, Woodson, and Sedgwick; those having 8,000 and under 10,000 are Cowley, Mitchell, and Osborne; those having 6,000 and under 8,000 are Hodgeman, Ottawa, Reno, Russell, and Wallace; those having 4,000 and under 6,000 are Coffey, Greenwood, Lyon, Marion, Scott, Sheridan, and Trego; those having

2,000 and under 4,000 are Dickinson, Doniphan, Ellsworth, Finney, Gove, Graham, Harvey, Johnson, Kingman, Meade, Phillips, Sumner, and Washington; those having under 2,000 are Allen, Anderson, Atchison, Barber, Barton, Bourbon, Brown, Chase, Chautauqua, Cherokee, Cheyenne, Clark, Clay, Cloud, Comanche, Crawford, Decatur, Douglas, Elk, Ellis, Ford, Franklin, Geary, Grant, Gray, Greeley, Hamilton, Harper, Haskell, Jackson, Jefferson, Jewell, Kearney, Kiowa, Labette, Lane, Leavenworth, Lincoln, Linn, Logan, Marshall, McPherson, Miami, Montgomery, Morris, Nemaha, Neosho, Ness, Norton, Osage, Pawnee, Pottawatomie, Pratt, Rawlins, Republic, Rice, Riley, Rooks, Rush, Saline, Seward, Shawnee, Sherman, Smith, Stafford, Stevens, Thomas, Wabaunsee, Wichita, Wilson, and Wyandotte. The total number given is 260,558. The United States Government statistics for the same year give the number at 469,433.

To ascertain the actual number of sheep I selected several counties where the number of flocks and those in each flock were known, and ascertained that it was necessary to add almost exactly 75 per cent of sheep assessed for taxation to get at the number of sheep on hand April 15, 1892, which would give 455,778 head left after shipping feeders. The lamb crop for 1892 will exceed 200,000, which will make the number of sheep and lambs at the present writing (June, 1892) 655,778 in the hands of the farmers and sheep-owners.

The wool clip for 1892 will amount to at least 3,000,000 pounds. The lamb and wool clip for this year will represent a 10 per cent income on $8,000,000, which may be considered a conservative estimate of the value of the sheep industry of Kansas at this time.

GENERAL FACTS ABOUT SHEEP HUSBANDRY.

Sheep husbandry is limited in extent in Kansas, in comparison with other branches of animal industry. While not more than one farmer in fifty is engaged in the business, it is a significant fact that there are more sheep-owners in the State now than there were when the number of sheep (during 1881–'84) was double that of the present time. There are more flocks, but they are very much reduced in size. The average value was never greater than to-day, and never before in the history of sheep husbandry in Kansas were there so many small flocks. There seems to be a gradual movement all over the State to engage in sheep-raising in a limited way. There are not exceeding 2 out of the 106 counties of the State where sheep are not now owned.

The class of sheep in central and western Kansas are mainly grade Merinos, while in the more densely populated counties of eastern Kansas they are mostly mutton sheep. Merinos crossed with Cotswolds, Shropshires, Southdowns, or grades of the medium and long-wooled breeds, are numerous. While fully 70 per cent of the flocks of sheep are Merinos, not over 50 per cent of the breeders use Merino bucks, and the other half use rams of the more strictly mutton breeds. The

larger flocks in the eastern half of the State are to be found in the counties of Butler, Elk, and Woodson.

The numbers of sheep owned by the large flockmasters range in size from 500 to 5,000, the average holding being about 1,000 head. Four hundred is considered a large flock for the farmer, and the bulk of these small farm flocks number from 25 to 50 head. Since 1889 the numbers have slowly but steadily increased, notwithstanding the large mutton sales, which have been fully equal to the increase of the flocks; so that the increase represents breeding sheep brought in from other States by those starting in the business. The present condition of the industry is in a very flourishing condition, and those flockmasters who are well equipped for the business express themselves as well satisfied. With scarcely an exception they say that, in comparison with other branches of live-stock husbandry, it surpasses them all. So far as profits on the investment and labor are represented, $100 invested in sheep will pay much more profit than $200 invested in horses or cattle. All agree that the remunerative prices received for mutton render sheep much more profitable now than any other class of stock. The price of wool is low, and of itself would hardly pay for handling sheep.

Since 1883 there has been quite a decline in numbers in several of the principal sheep counties, owing to the low price of wool and the settlement of the range country, making it necessary for the flockmaster to own the land and use fenced pastures. As a result a number of the older sheepmen have either abandoned the business or reduced the size of flocks in conformity to their environments. However, one result of this reduction in numbers has been to cause the owner to handle a better class of sheep and take better care of them than he did under the old régime of unlimited free range.

At present the outlook is brighter than for years, and a general revival of the business is anticipated, but on a much different basis than when sheep-raising was largely confined to the sparsely settled regions of western Kansas, and the sheep consisted of the small, wrinkly, and greasy Merinos which were grazed free on Government land. The conditions are now different; the Government land is all gone and now owned by individuals, and it is necessary to lease or own the land and have inclosed pastures; besides, the class of sheep that can now be handled profitably must have both wool and mutton qualities. Those who have continued in the business have found it necessary to conform to these changed conditions, and breed more with reference to mutton qualities.

Sheep of the mutton breeds are being brought in from Eastern States in limited numbers, and no bad results seem to be caused by the change of location or climate. After they become acclimated an improvement in constitution is the usual result, but the wool loses some of its softness and becomes dingier or harsher. Sheep brought in from the West and South usually show an all around improvement, both as to increased fleece and size of carcass. They are uniformly healthy.

As a rule, pure-bred rams are used of the following breeds, ranking in the order named: French and American Merinos, Shropshires, Cotswolds, Southdowns, Lincolns, Oxfords, and Hampshires. The ram is not used much until two years old. After that time he is given from 40 to 100 ewes, and is usually bred to a limited number each night after the ewes are yarded. The ordinary breeding season is during October, November, or December. The aim is to breed so that the lamb will come soon after the sheep are out on grass. November, however, is the usual and most desirable month for breeding. The ram remains with ewes from twenty to sixty days, if turned in at all during the breeding season. The method of hand-breeding is much more generally practiced than formerly.

Sheep-owners from the various counties report that from 5 to 10 per cent of the ewes fail to breed, and that the average of lambs raised is from 75 to 95 per cent. The more experienced sheep-raisers who understand sheep husbandry seldom have a ewe in good condition fail to breed, and succeed in raising nearly every lamb. There is no good reason in Kansas for not raising a larger per cent of the lambs dropped than is generally reported. It is simply criminal carelessness on the part of flockmasters, or because of the depredations of worthless dogs or prowling wolves.

Only a few years ago wool was the sole object of the sheep-raiser in this State, but now, when questioned regarding the main objects sought, the invariable answer is, both wool and mutton. However, the tendency to mutton only is apparent in many flocks at the expense of fleece, when by judicious selection and mating, first-class muttons may be secured without any sacrifice of wool. A profitable fleece of delaine, combing, and medium wool can easily be secured, and at the same time a good mutton carcass weighing from 120 to 175 pounds.

The time for shearing sheep is during May or June, usually the latter part of May. Pure-bred flocks are generally shorn in April. Shearing is usually done in a shed or barn, near the yard or corral, on a platform or board floor prepared for the purpose. Each fleece is generally tied up separately. If the flocks are of any considerable size three or four shearers are employed, but when they only number a few head the farmer does his own work. At present the flocks are so remote and scattered in a few counties that the owner is compelled to consign his wool to commission houses. Fully 80 per cent of the clip is thus consigned to houses in St. Louis and Chicago, and occasionally to Boston or Philadelphia, but most of the growers express a preference for the St. Louis market. Every sheepman would prefer to sell at home were such a thing possible. But the growers are too much scattered at present for that; yet, if they would form an association and bunch their wool, similar to the plan of the Hopkins County Association in Texas, they would find it a good thing. Several sheep-owners in the State have talked of forming such coöperative associations, but nothing as yet has been

done. If the growers of several counties would unite and bunch their wool at some one central point they would in time develop quite a local market and realize much better prices.

The Kansas fleeces are heavy, and the average shrinkage in scouring is about 65 per cent. The usual weight for fine wool is from 6 to 12 pounds, and in some flocks even more. The medium wool usually runs from about 5 to 8 pounds per fleece. The average for the State for fine is 7½, and for medium about 6½. The class of wool produced in the State consists mainly of the fine and medium grades. There are now some combing and delaine wools grown. This grade of wool is increasing every year, as also the medium grades, which will eventually comprise the bulk of the clip of the State. The prices realized by the growers last season for the various grades were from 12 to 22 cents. The cost of marketing is about 2 cents per pound when sent to western markets.

One of the chief drawbacks to the sheep industry is the difficulty encountered in marketing wool. Some growers are careless in preparing it for market, and many individual clips are in bad condition and heavy with dirt. The result is that Kansas grades in the wool market quotations are usually lower than similar grades from other States. Many growers think that there exists a combination between the manufacturers and the wool-dealers and commission merchants which keeps wool below its actual value and practically prevents competition. In most parts of Kansas the amount of wool is too small to attract buyers from a distance, so that the sheep-owners must either sell to the local buyer, who knows very little of the merits of wool or the different grades, or consign his wool to commission merchants, taking the risks of getting adequate or satisfactory returns. Formerly the bulk of the consignments from Kansas went to Eastern markets, but as it usually required from two to ten months before final returns were received, the consignments now mainly go to St. Louis and Chicago.

High freight rates are a serious difficulty. For instance, the rate on a car of wool from Butler County to St. Louis is about $180, while the rate for a car of live stock is only $36. The rate for wool is about four times as high as the rate for wheat. A brief summary of the chief difficulties and objections encountered in the disposition of the wool crop as enumerated by the sheep-owners are as follows: Exorbitant freight rates; want of home buyers; unjust rating of Kansas grades in market; unreliable commission merchants; too many middlemen between wool producer and manufacturer at the expense of the growers.

Sheep-owners annually dispose of a certain proportion of their flocks either as muttons or stockers, and the average sales constitute from 20 to 30 per cent of the flock, usually about one-half of the yearly increase. The ewes are generally sold to farmers who wish to start in the business, and the prices paid after shearing is from $2.25 to $4 per head. The bulk of the sales are mature wethers and sometimes the ram lambs. When the flocks are small they are readily taken by the local butchers

at from 3 to 5 cents per pound. The car lots go mainly to Kansas City markets, and occasionally to Chicago or St. Louis. They are sold either off the grass during summer, or, if grain is fed, during the winter. There is always good demand at fair prices for fat sheep, and there is no class of stock from which the farmer realizes better prices and more money for the feed consumed. The average gross weight of fat sheep ranges from 90 to 115 pounds for Merinos, and for the grades and crosses of other breeds from 100 to 150 pounds.

The cost of keeping per sheep a year is variously estimated at from 50 cents to $1.50. In western counties, where land is cheaper and fences not much used, the annual cost per sheep is placed at 50 cents to 75 cents, while in central and eastern Kansas the cost is put from $1 to $1.50, depending, of course, on amount and kind of feed. The majority state that $1 will cover all cost, including grain feed. Some farmers who keep a few head say that there is none to their credit than the cost of keep. Besides the cost of pasturage, it is estimated that 2 bushels of corn and hay will cover all feed expenses. Those who raise mutton sheep say that the fleece will pay all the expenses of a year.

The local disadvantages encountered in sheep husbandry in the different sections of Kansas, as enumerated by the owners, are as follows: Inability to sell wool at home for cash; lack of competent persons to care for large flocks; too great expense to guard small flocks from wolves and dogs; general hostility of too many farmers against sheep; poor winter pastures in western Kansas after heavy fall rains, and too short a season of green grass; scarcity of cheap range for large flocks; lack of tame-grass pastures generally; necessity for keeping in repair the neighbors' line fences to protect against cockle-burs; the cold rains which frequently come after shearing; the hot sun of July and August on the prairie pastures and lack of shade; light soil and high winds; lack of a wolf-bounty law and the increase of wolves; the high price of lumber and wire for fencing, and dogs.

It should be remembered that this aggregation of disadvantages is by no means general; in fact, skillful management on the part of the flockmaster and coöperation and organization of sheep-owners would easily overcome most of them. Give sheep good care, plenty of feed and suitable shelter, and they can be raised successfully and profitably in every county in Kansas.

Among the advantages for sheep-raising in Kansas are the high and gentle rolling lands, which are sufficiently fertile to produce vegetation in the greatest abundance. There is hardly a foot of land in the State that can not be utilized in sheep husbandry. A great variety of cheap feed is easily produced in every section of the State. Stock water is plentiful and pure. The climate is dry and healthful and especially adapted to raising sheep. Disease is practically unknown; the native grasses are abundant and nutritious, and tame grasses readily replace the wild in the farming districts of the State. No other

State produces a greater variety of forage plants, and it surpasses most Western States in the production of sorghum, alfalfa, rye, and millet. Grazing is afforded most of the year, and the feeding season does not usually exceed from two to three months. Lands are cheap and productive, and no other agricultural State can produce so much feed at so little cost. The fleece grown by experienced sheepmen has a fine, strong fiber, and good length of staple. Indeed, nature seems to provide all the necessary elements for profitable sheep husbandry.

There is no class of stock raised in Kansas that meets with as little loss from disease as sheep. By reason of neglect or indifferent management there are occasional cases of snuffles, tapeworm, grub in the head; ticks and scab are sometimes prevalent, but nothing of a serious nature has been reported. The chief loss is from dogs and wolves. There has been very little loss during recent years from exposure. The losses from dogs and wolves range all the way from 1 to 10 per cent. The losses from all these sources, including incompetent management, seldom exceeds 5 per cent per annum for the whole State.

Secretary Mohler, of the State board of agriculture, places the loss of sheep in Kansas for 1891, from all causes, at 5,475.

According to high authority most of the losses of sheep, either by depredations or disease, are traceable to dogs. Recently Prof. L. C. Wooster, of the Eureka (Kans.) Academy, in a lecture on "Some of our Friends and Foes of the Animal World," in speaking of dogs, said: "Prof. Verrell, of Yale, says that many of these parasites are derived from dogs through their omnivorous habits; also, that it is perfectly safe to say that twenty-five sheep die from parasites derived from dogs to one killed by the teeth of dogs, and that fifty persons die from the same parasites to one from hydrophobia." He declares further that the loss of human life each year more than counterbalances all the good all the dogs in the civilzed world could possibly do.

If it is worth while to have sheep at all they should be good ones, because it costs no more to feed and take care of good sheep than of inferior ones. To make them profitable good management, shelter, and care are imperative. An ample supply of water and feed should always be given them. During six months of the year the wild and tame pastures will answer, then the stubble and stalk fields should be utilized, and during fall and winter the fields of wheat and rye. Good hay, corn fodder, and about a bushel of grain daily to 100 sheep during winter are sufficient. It is necessary to avoid confining them too closely. They require exercise daily, and appreciate a variety of feeds, such as are accessible wherever wheat is grown.

Another important matter is suitable yards and sheds, which should be inaccessible to dogs or wolves. Sheep must be yarded every night, winter or summer. The yard should contain water and have suitable racks for grain or roughness in winter, although it is considered best to feed straw and hay on the ground, or perhaps in racks so constructed

that seed or chaff will not get into the fleece. If they are properly bred, fed, and sheltered they become veritable mortgage-lifters, improve the fertility of the soil, appearance of the farm, and provide comforts for the household. Sheep are needed to diversify live-stock husbandry and prevent overproduction of other classes of domestic animals. To make a success of sheep-raising civilized methods of management are necessary, and this, of course, requires skill, intelligence, and energy, and the farmer who is not thus endowed will not make a success of the business or prosper in any branch of agriculture. The farmer who makes a success of sheep-raising will prosper where anyone else can.

SHEEP FEEDING.

Since 1889 there has developed a new and profitable feature of the sheep industry, which is rapidly becoming quite a business in Kansas and Nebraska, as well as assuming considerable importance in other Western corn-producing States. I refer to the business of feeding, which has been discussed more in detail in the Nebraska report, because that State so far has led in the numbers of sheep fed, although during the winter of 1891–'92 almost as many sheep were fed in Kansas.

The large packers, like Swift & Co., and others, who have an extensive mutton trade, have found it rather difficult to secure enough sheep on the Kansas City and Chicago markets to meet their requirements, so therefore, during recent years have had to send out buyers to visit the sheep-owners of the West and contract for all the mature and fat wethers they could obtain, and such as were not fat enough off grass for slaughter were sent to feeding stations, mainly in Nebraska and Kansas to be grain-fed during the winter. This move on the part of the great packers induced stock-feeders to do likewise, so that during the summer the feeders send out buyers to contract wethers to be delivered in the fall, when they are fed from sixty to ninety days and then forwarded to the markets.

With the exception of the year 1890–'91, when feed was high, these feeders have made handsome profits, and as a consequence the business has grown in volume and importance because no other class of stock fed realized as good profits as sheep, and the amount of capital required is not so great as that for other stock. Kansas is admirably adapted for winter stock-feeding because of the comparatively mild and dry winters and by reason of her large production of cheap grain and forage.

The principal sheep-feeding stations in Kansas last season were located at Solomon City, Hope, Eldorado, Hutchinson, Ogden, Wamego, Russell, Abilene, and Lebanon. Small lots were fed at various points in central and western Kansas.

The total receipts of sheep at the Kansas City stock yards for 1891 were 386,760 head. Of this number 206,662 came from Kansas and the

remainder from the following-named States: Texas, 72,712; Missouri, 50,227; Colorado, 33,752; New Mexico, 9,126; Nebraska, 8,490; Arizona, 5,511; Indian Territory, 2,481; Utah and Wyoming, 799. Of the sheep received at Kansas City over 200,000 were taken by the local packers.

The Kansas City market received during the first five months of this year 147,167 sheep from Kansas, which represents sheep fed by the growers and feeders.

If Kansas produces a good corn crop the present season there will be not less than a quarter of a million sheep brought in from the south and west to be fed during the coming winter.

The feeding the past season in Kansas was not confined to aged wethers, but a number of yearlings were fed, and fully 20 per cent of the number fed consisted of ewes. The success made by the feeders last season will no doubt induce many new men to engage in the business, when the results of 1890–'91 may be duplicated in losing the feeders money, especially if prices advance on the range and grains should be scarce and high priced.

TESTIMONY OF SHEEPMEN.

Herewith are presented brief statements from representative sheep-owners of the different sections of Kansas relative to their personal experience regarding the industry in many of its phases. A careful perusal of what these men say will give the reader an insight of the business from the standpoint of the grower, which is an important consideration in a comprehensive review of the industry:

George R. Mann, Olivet, Osage County:

I have been keeping sheep in this county for over twenty years, and I find it more profitable than any other branch of farming. Kansas is destined to become one of the leading mutton and wool producing States, as she has all the necessary qualifications in the way of climate and feed.

W. J. Snodgrass, Gordon, Butler County:

When I first came to Kansas, in 1870, I bought Texas cattle and soon failed. Had I put the same money in sheep at that time I might, with the same success that I have had since, been a millionaire. It does seem to me that any good, careful rustler could make a stake in the sheep industry—but, every man to his trade.

V. B. McClure, Logan, Phillips County:

I have handled sheep twelve years in Kansas, six years as a herder and the same time as owner, and I like the business. I think there should be more sheep kept, as there are grass and feed enough wasted nearly every year to pay half the mortgages on farms if converted into wool and mutton.

E. T. From, Louisville, Pottawatomie County:

Have had twenty-five years' experience with fine-wool sheep, and in all that time they have paid expenses, except the year after the tariff reduction of 1883, when feed was very high and wool very low. Then they ran me behind about $1 per head. This part of Kansas is well suited to keeping small flocks of mutton sheep, but would

hardly pay to fence to raise sheep for wool alone. Our farmers as a class are not willing to devote care enough to succeed with sheep at present prices. There is no excellence without labor in sheep husbandry.

E. C. Warren, Eudora, Douglas County:

Sheep pay in proportion to the care given them, and no other class of stock responds so quickly to care and good management. The sheep business is growing fast in a small way, and in a few years will reach large proportions, provided there is no unfriendly legislation. This was a great cattle country until the "Big Four" overshadowed the business, since which time cattle-raising has declined and sheep are taking their place.

Samuel Jewett, Lawrence, Douglas County:

When wool was worth 25 to 30 cents, sheep-raisers were prosperous. The future of the sheep industry depends upon Congress. I desire to suggest one thing which is just and right for the whole United States, and that is a national wolf-bounty law—one price everywhere for scalps in each county where killed. This would be a clean sweep of the wolves and save the sheep from constant ravages, besides saving thousands of dollars to stockmen and raisers generally.

J. S. Durkee, Abilene, Dickinson County:

I began the sheep business in Kansas in 1881 by purchasing three ewes, which I fed all the corn they would eat. They were extremely fat, and so were their lambs when they came in April, so much so that they were nearly helpless. This was for the want of exercise by the ewes before lambing. Sheep require about 2 miles travel daily, summer and winter, when the weather will permit, as such exercise makes strong lambs. Three hundred head of sheep are as many as should be fed in one bunch in winter.

Brady & Wickham, Girard, Crawford County:

When we came to Kansas in 1876, we brought with us 1,600 sheep from Michigan. We have kept sheep ever since and know from our own experience that sheep will net a greater profit from the amount of capital invested than any other branch of the live-stock industry. Judging from the numerous inquiries of late for sheep, a general interest is being awakened.

C. E. Westbrook, Peabody, Marion County:

For thirty-seven years I have owned sheep; nineteen years of that time in Kansas. I have had experience with most of the different breeds and find the Merinos the best of all for this State. While my flock averages about 1,000 head a year, I am keeping fewer each year, for the wolves and dogs get worse all the time. If sheep could be turned into the pastures and left there, most farmers would want some.

H. L. Nye, Belle Plaine, Sumner County:

Have handled from 1,000 to 8,000 sheep for twelve years. The day for large flocks is past. If farmers would keep from 50 to 100 sheep, lamb them in March and April, shear them in April, club together and hire a man for each 500 head to range them through May and June, then take them back on the farms to clean up their wheat stubble fields, weedy corn fields, volunteer oat fields, and winter stalk fields, then feed literally with grain, always keeping them fat, they will be successful.

W. W. Cook, Russell, Russell County:

I find that careful and intelligent labor bestowed on sheep gives good returns, better than can be had from any other kind of stock. The type of sheep is changing from the fine wrinkly kind to large smooth sheep, suitable for both mutton and wool.

That large flocks, ranged, will be divided into smaller flocks and inclosed in pastures. Every farmer could keep a few sheep profitably and to advantage.

R. L. Gilbert, Chester, Jefferson County:

Sixteen years ago I began with 7 very scrawny looking sheep and bred to a thoroughbred Cotswold buck, and obtained some good grades. Then I purchased 6 imported Canada Cotswolds and in less than two years all died but the buck, who did me good service; but the importation gave my flock the scab, which took me two years to eradicate. Six years ago I gave up using Cotswold bucks, and have used Shropshires ever since, and am firmly convinced that it is the sheep for early maturity.

William H. Peters, Boston Mills, Cherokee County:

I have found sheep very profitable, not only for mutton and wool, but to improve the farm and kill out weeds. I wintered 180 head the past winter on roughness, and they ran out in the pasture, and I only lost 2; all the others are in good condition. Ordinarily sheep can be run the year round on pastures here. There is a good demand for breeding ewes among farmers.

John Cresy, Aliceville, Coffey County:

While I have made a success of the sheep business I have reduced the size of my flock from 1,200 to about 125 head, not because I was not satisfied with them, but because we have so much other stock. My boys would rather handle cattle, because of the close attention the sheep require during lambing season. The future for sheep in this State is good, but small flocks will pay better than large ones.

Eli Sherman, Webster, Rooks County:

I began handling sheep in Kansas in 1875, and made a success of it until 1883, since which time my expenses have been about the same as my receipts. I have made the sheep business a specialty, and staid by it while most of my neighbors broke up and went out of the business. If our farmers would grow grain, keep a few cattle and hogs, and handle sheep for mutton, I think they would win.

Frank R. Lusk, Rago, Kingman County:

Have been in the sheep business ten years, and during part of the time have had a good many cattle and hogs, yet I find sheep much the best paying stock, and believe that now, since the successful raising of alfalfa, sheep fed on it will be still more profitable. Want of fencing material is the main reason why so few sheep are kept by small farmers.

William H. Fitzhugh, Wellington, Sumner County:

I bought 17 head of sheep in the fall of 1880 for $100, and as they were free from scab when I bought them I have never dipped them, and only bought an occasional ram. I have never had disease on my place. My receipts from wool and mutton have averaged over $200 a year. I have now a flock of 106. In 1888 I sold over $500 worth of mutton, and in 1889 about the same, which would make my returns in eleven years at least $3,500. My ewes nearly always have dropped two lambs, so I have always raised more lambs than I had ewes; but as the lambs are dropped in winter I usually lose 25 per cent.

J. R. Brown, Kingman, Kingman County:

I started in 1882 with 300 Mexican ewes on shares, and gave half the wool and half the increase for the privilege. The first year I lost 150 lambs, because they came about March 20. I now have them dropped late in May with good results. For the last three years my wool has sold for about $800 per year, and I sell about $500 worth of mutton a year.

Elwood Rush, Erie, Neosho County:

We have succeeded well, though our experience has not been as extensive as some. We find that sheep need careful attention and at the proper time. The time is coming when there will be a small flock of sheep on half the farms of the country, then there will be fewer mortgages. My flock of 40 head run in the same pasture with my horses and cows, eat weeds and stuff that the horses or cows will not touch, and they give me a crop of wool and a crop of lambs. I have some to sell each year, which is a triple profit.

M. S. Chapel, Asherville, Mitchell County:

My opinion is that when each farmer shall keep a small flock of sheep of some breed that combines both mutton and wool, just the number he can easily keep on his own land, sheep-raising will be much more profitable, and on the whole more sheep in the country than we have to-day.

A. J. Harter, St. John, Stafford County:

While I have had a few reverses in sheep husbandry, on the whole it has been a profitable business with me. It is at the present time and has been in the past the best stock a farmer can keep. Judging from the many inquiries of late for stock sheep the future outlook is good. My greatest difficulty has been with the coyotes, but I have succeeded in ridding myself of them with good greyhounds.

J. F. Bayless, Yates Center, Woodson County:

I am now 57 years old and have been tending sheep ever since I was old enough to do anything, and I am satisfied that Kansas is a good sheep State, in fact better for them than for any other kind of live stock.

George B. Bell, Neeley, Leavenworth County:

I have been among sheep all my life and will stick to them so long as I can, because I think that the future will find sheep in the front rank in this country. Many of the farmers seem anxious to try a few, and they will find mutton a nice meat to eat, wool the best material for clothing, sheep good to clean up the farm and improve the pastures and ever ready to respond when a little cash is wanted.

W. J. Colvin, Larned, Pawnee County:

I have bred and handled sheep for fifty years in the States of Michigan, Oregon, California, Colorado, New Mexico, and Kansas, and have kept from 200 to 8,000 at a time. Eventually sheep will come to the front again in Kansas as well as in other Western and Southern States, and will be one of the most profitable branches of husbandry. But pools and combines must be done away with first. Sheep will pay today more than any other stock if well fed and protected, and kept in herds in accordance with the range and feed.

E. D. King, Burlington, Coffey County:

With my experience of twelve years in the sheep business in Kansas I am satisfied that there is room in this State for five millions of sheep and not interfere with farming or other stock-raising, for there is coarse feed in the shape of hay, straw, and corn fodder annually allowed to go to waste to more than keep that number of sheep. As our farmers learn that their land needs fertilizing, that they can easily fence sheep with wire, and that the coyote and dog nuisance will be abated, they will acquire confidence in the business, keep sheep, and help furnish all the wool our country requires, and of quality fit to make robes for a princess.

J. W. Brownlee, Horton, Brown County:

I invested $140 in 59 head of sheep five years ago. They were common Merinos,

and I bred them to Cotswold bucks, which improved their produce in quality of wool and size of carcass. My original flock averaged me about 8-pound fleeces, while their produce will yield a 12-pound clip, long white staple, worth 2 or 3 cents more than the greasy Merino. I find that sheep three-fourths Cotswold and one-fourth Merino increase the weight of carcass at the expense of the wool, so I am now breeding my coarsest ewes back to Merino bucks. I have on hand 144 sheep, 100 of which have 130 lambs, with 20 more ewes yet to lamb. I value my entire flock at $1,200. This season's crop of lambs will bring me $800 by the end of the year. I have sold $1,000 worth of sheep, mostly to Horton butchers, including 50 head of yearling ewes, at $5.50 per head. I believe no State in the Union is better for sheep than Kansas.

J. H. Sands, El Dorado, Butler County:

For the past ten years I have handled from 1,000 to 10,000 sheep, mostly good strong Merinos. Have used some Southdown rams, crossing the half-blood ewes back with Merino rams, and have always raised 80 per cent or more of lambs dropped. Have had no trouble with disease, except scab, which I have always cured with one dipping of lime and sulphur. Sheep-keeping will decline in Kansas unless more small flocks are kept for market lambs—for which business this State is preëminently well adapted as well as making muttons—owing to the low price of wool in connection with other causes. Subject only to competition within the United States, I believe from 5,000,000 to 10,000,000 of sheep could be kept in the State, to the great enrichment of its soil and citizens. They can utilize the wild grass, dry winter feed, and dry springs better than any other class of stock.

CHAPTER IV.

THE SHEEP INDUSTRY IN ARKANSAS, TEXAS, NEW MEXICO, AND ARIZONA.

ARKANSAS.

In studying the natural resources of Arkansas in its relation to the animal industry it is surprising that every branch of live stock is not larger, better improved, and made to rank higher in importance in comparison with other and varied industries, considering the population, cheap lands, and the adaptability of the country for the raising of domestic animals. It can only be explained by the character of the population, lack of capital, the many other pursuits for which the State is adapted, and its large area of timber lands. Many avenues of industry are suggested in a State that can produce every variety of garden and field crops indigenous to the temperate zone.

According to the census of 1890 the population of Arkansas is 1,127,744, of which number 816,227 are white and 311,227 are colored. It is probably from the fact that a large proportion of the population have only moderate means that the various agricultural industries have developed slowly and been conducted in an unprogressive manner. Labor is plenty and cheap and the cost of living small, hence the people have been content with limited results, and development of any particular industry has been slow.

Arkansas wool is in rather bad repute with those who handle the wool product of the State, owing to the cockle-burs and the way the fleeces are usually packed loose in the sacks and not tied up as they should be, the reason being that the clip is generally marketed in small quantities. However, when the wool is tub-washed and clear of cockle-burs it is readily sought by the wool dealers and by Western manufacturers. The clip of the State as sold in the market generally brings a higher price than almost any other Western wool; yet, at the same time, the growers of this wool probably realize smaller amounts than the growers elsewhere for similar wools, because the grower generally sells it to the local merchant from whom he has been buying supplies for months, and is almost compelled to take whatever the merchant may see fit to give him.

The sheep industry of Arkansas, although quite general, is invariably conducted on a small scale. Sheep are raised in every county in the State, seventy-five in all. This is quite notable in view of the total number. The numbers of sheep in the different counties range

from a few hundred as the minimum to about 14,000 as the maximum number for any one county. The counties of the State having a number in excess of 10,000 and less than 15,000 are Benton, Carroll, Madison, and Washington; counties having 5,000 and less than 8,000 are Boone, Columbia, Faulkner, Franklin, Fulton, Independence, Izard, Logan, Pope, Randolph, Sharp, and Union; counties having 3,000 and less than 5,000 are Baxter, Bradley, Clark, Cleveland, Dallas, Grant, Hempstead, Howard, Johnson, Marion, Nevada, Newton, Ouachita, Pike, Polk, Searcy, Sebastian, Sevier, Van Buren, White, and Yell; the other counties of the State have less than 3,000. The present number of sheep in the State will not exceed 275,000 head, with a current value of $550,000, which makes a very small average. The progress of the sheep industry for the past twenty years may be seen by the following table, which shows the number reported to the auditor of State for taxation purposes from 1870 to 1890, inclusive. The greatest numbers reported were for the years 1876 to 1881:

Year.	Number.	Year.	Number.	Year.	Number.
1870	167,157	1877	295,403	1884	211,046
1871	217,384	1878	322,795	1885	204,534
1872	248,087	1879	327,357	1886	211,005
1873	234,611	1880	317,565	1887	211,249
1874	223,578	1881	276,587	1888	250,914
1875	253,521	1882	248,087	1889	258,464
1876	263,987	1883	224,611	1890	232,435

About 1874 renewed interest in sheep-raising was manifested, which resulted in the enactment of a dog law, entitled "An act to protect and encourage sheep-raising in the State." This law took effect January 1, 1876. This enactment provided that the right to own dogs of any kind within the State of Arkansas shall be deemed a privilege, and the same equal to $1 per capita for each dog kept by any citizen, or by any member of his family, or any ward for whom he was the guardian. Every person in the State who was subject by law to pay taxes was included in the provision of this act. The assessor took the list when making his rounds, and $1 for every dog was added to the personal property of the person when taxed. While this law was a very good one, and would have added immense value to the taxable property of the State, it was in force only during the year 1876. No law ever passed in the State caused so much of a sensation as did this, and at the session of the next legislature, in the winter of 1877, one of the first bills introduced was for the repeal of this dog law. Nearly every member of the legislature had prepared a bill for its repeal, so great was the pressure from the dog-owners of the State. Had this act continued in force until the present time the condition of the sheep industry would be materially changed and of very much greater consequence, and the Government statistician would not have been compelled to place the average value

of the sheep of Arkansas at $1.47, the lowest average value of any State in the Union, as shown in his report of the numbers and values of farm animals for January, 1891. During the year that the dog law was in force the revenues received from the whole State were $84,906. Seven counties in the State paid no dog tax whatever, and it is a notorious fact that the majority of the dogs of the State were not listed for taxation, and doubtless were not worth the dollar to the owner.

Yet, notwithstanding these adverse circumstances which have beset the industry for the last thirty years, it is safe to assume that unless the industry meets with some serious drawback not now anticipated the number of sheep will increase. From the best information obtainable, there seems to be a breaking up of old methods, and newcomers from other States are now taking advantage of the cheap lands of the State, and are paying more attention to stock-raising than to cotton-growing. A State having so much cheap land and so prolific in its production of all kinds of feed can not long be overlooked by settlers, in view of the fact that the stock ranges farther west are fairly well occupied. There seems to be no good reason why the general farmer on the alluvial farms should not keep a limited number of medium-wool sheep in connection with other live stock. They would add to the profits of his work and at the same time improve his land. On the uplands and in the hilly and mountainous regions of the State stock-raising as an exclusive pursuit would pay well and could be conducted on a much larger scale. These stockmen would enjoy the advantage of mild and short winters, and during the winter season, when necessary to feed grain, would be able to secure it at very little cost, in case they did not produce it themselves. They would also have a great variety of grains, grasses, and forage plants, corn, wheat, oats, barley, cotton, and flax being grown quite successfully. There are thirteen cotton-seed mills in the State, and in feeding value the cotton-seed meal is unsurpassed by any other stock food, considering its nutritive value and cost. Even the cotton-seed hulls are considered equal to prairie hay, and can be purchased at $2 per ton, and the meal at $16 per ton. In many portions of the State stock can be run in the open commons for nine months free of cost to the owner.

Experiments have demonstrated that both the soil and climate of Arkansas are well adapted to the growth of grasses. The rainfall is sufficient for them to attain a high state of development; the native grass grows everywhere in abundance, and the tame varieties are so easily grown, that the progressive stockmen could well afford to avail themselves of them. Timothy, blue grass, redtop, orchard grass, Bermuda, red and Japan clover, and alfalfa all do well; and, in addition, such crops as millet, sorghum, and cowpea can be grown on the land after many of the regular farm crops are harvested.

GENERAL FACTS ABOUT THE INDUSTRY.

There is at present about the same number of sheep in the State that there was about twenty years ago, and very much the same class. Taking into consideration the whole State there has not been any improvement of importance, either in the breeds of sheep or in the methods of conducting the business. As a matter of fact, the animal industry has not been the leading occupation of the agricultural classes, although sheep-raising has been about as prominent a branch of it as any. Yet it is a significant fact that the lack of progress in sheep husbandry is not because the country is unsuited for the successful prosecution of the industry. This is clearly shown by the fact that the same number of sheep have been maintained annually for so many years without increase or decrease. It seems that the shipments and home consumption, together with the losses from various sources, have been equal to the annual increase of the flocks in the State.

The facts presented in the preceding pages regarding the climate, topography, and physical surface of the State, together with the information given concerning its natural resources, all go to show clearly that sheep husbandry can be made a success in a majority of the counties of the State.

In many respects Arkansas is particularly well and favorably suited for successful sheep husbandry. It is also evident that a very large number of representative farmers and stockmen have recently become convinced of the adaptability and profitableness of sheep husbandry as compared with other branches of animal industry and agricultural pursuits. And like the general farmers of other States, they have learned through adversity and bitter experience that following a leading and almost exclusive agricultural pursuit is unprofitable. It is a generally accepted fact that no State can ever become wealthy or prosperous by persistently adhering to a single crop; and the cotton mania in Arkansas has been what the wheat mania was for the Dakotas. However, the cotton craze is not the only or the chief drawback and obstacle to the success of the sheep industry; but equal to it in importance is the dog nuisance. The multiplicity of the omnipresent and worthless curs has become a byword with all who are conversant with sheep-raising in Arkansas, and if the word "sheep" is mentioned to anyone in connection with Arkansas, he invariably throws up his hands and exclaims, "Dogs, dogs, dogs!" Many, even, when asked what diseases are most common among sheep, answer, "Dogs—a fatal malady affecting the industry." If you ask them why the sheep industry is declining, the answer is, "Dogs;" or if you ask them what are the chief disadvantages and obstacles to be encountered in sheep-raising in the State, the answer still is, "Dogs." Therefore, to sum up briefly the reasons why the sheep industry of Arkansas has not made greater

progress, or is not one of the leading industries of the State, it can be ascribed mainly to the dog pest demoralizing the business and the mania for cotton culture.

It is remarkable, notwithstanding the preceding facts, that there are as many, if not more, sheep-owners in Arkansas than in any other State bordering on the Mississippi River. They probably own a smaller average number of sheep than the sheepmen of any other State in the Union. It is also significant to note that there are fewer sheep-owners who make it an exclusive business than in any other State where the sheep industry is of any importance whatever. It may be said that sheep-raising in Arkansas under existing conditions is purely a side issue and receives, therefore, only partial attention. And while there are nearly as many sheep as any other class of live stock, hogs and cattle excepted, yet the "curs" and "razor backs" are too numerous for the sheep, and there is too little live stock of any class. When the general farmer of the State awakens to the true condition of affairs and becomes more familiar with the natural resources of the State, the live-stock situation will materially change; more prosperous times will come, and the wealth of the State will increase because of the profitableness of raising improved stock.

It is an unfortunate condition for the sheep industry that sheep have had so little attention from past or present owners. Sheep-raising having been made a side issue, it has been placed at a decided disadvantage, and there is little hope for the future unless this system is changed. Whenever sheep husbandry receives proper attention, according to its merits as an agricultural pursuit, it will become one of the leading interests of the State.

The class of sheep most numerous in Arkansas is usually designated as common or native sheep. There are very few pure-bred sheep, the Merino, Southdown, Shropshire, and Cotswold breeds being represented chiefly by their grades. There seems to be in some localities quite an intermingling of the blood of several breeds in the same animal. Some sheep-owners graphically describe the sheep of the State as consisting of mainly the old "scrub" stock, and the "full-blooded mongrel" caused by haphazard methods of breeding and handling.

The flocks owned in the State are uniformly small, and range in number from 10 to 50 as an average. According to reports received from all the counties, there are only three of them that reported flocks to exceed 50 head, and only one county reported flocks as large as 150. The flocks are too small to require the services of a herder, and as a consequence they have but little attention, being allowed to run on the commons or uncultivated and unoccupied lands which may be near the farm of the owner and furnish the pasturage for the greater part of the year. After crops are gathered the sheep are allowed to run in the fields, and during the winter months are fed somewhat. There seems to be no lack of feed, because the native and cultivated grasses are

nearly everywhere abundant, besides other herbage and browsing, such as is common to the forest and timber lands of the State. The cultivated grasses, which afford considerable pastures, consist of blue grass, timothy, Bermuda grass, red and Japan clover. The supply of water is everywhere abundant and is furnished by the natural fountains, creeks, rivers, and ponds. The standing water, however, is not good during the months of July and August; otherwise the water supply is quite suitable for stock.

The annual loss of sheep from wild animals, dogs, and exposure is quite large, considering the small size of the flocks. It comes from the fact that the sheep are allowed to shift for themselves and do not receive the care and attention necessary for proper protection; and with this in view it is a matter of some surprise that the average loss is not greater. The loss from exposure is remarkably light, very few sheep-owners reporting any loss from this source; the heaviest occurring among the flocks of sheep which are held in the lowlands; outside of these localities 2 or 3 per cent is the average annual loss. The heaviest loss, which is reported everywhere, is that resulting from the ravages of dogs. The reports of such losses vary from 5 to 25 per cent; the annual loss from dogs being not much less than 10 per cent of all the flocks of the State. The loss of sheep from wild animals is not widespread; the losses in counties where depredations occur average from 2 to 5 per cent. A careful, conservative estimate shows that 10 per cent of the flocks of the State could be saved to the owners with adequate protection from the ravages of dogs and wild animals. That sheep-raising has continued to the extent it has, in view of this annual loss and other adverse circumstances, is certainly strong evidence of the adaptability of the State to the sheep industry.

Very few sheep have been brought into this State for many years. The few introduced by the more prosperous flockmasters for the purpose of improving their sheep have been Merinos and Shropshires.

It appears from the best information obtainable that sheep which have been brought to the State from other States, north, east, or west, acclimate very readily and show an improvement in the wool fiber, length of staple, and increase in weight of fleece; and in some cases the constitution of the animal was strengthened, especially those brought from the east.

Very little attention is paid to the breeding ewes. A single buck is all that is used in the average flock, and he remains with it the year round, and generally continues in service until death releases him. In most flocks the buck is of the common or native sheep, and in exceptional cases he may be a Merino, Southdown, Shropshire, or Cotswold. However, most of the ewes breed during August and September, and sometimes as late as November; and the lambing season generally covers a period of from one to three months. The number of lambs raised is variously reported from 50 to 90 per cent, with an average of,

perhaps, about 80 per cent. It is very seldom that any of the ewes fail to breed, and were it not for the dogs and hogs the average of lambs raised would be close to 100 per cent. Most of the owners provide shelter for severe weather; it usually consists of a long, low, well-roofed shed, open to the south or east and closed on three sides.

The object of sheep-raising is not confined to either wool or mutton, but includes both, and with reference to home consumption. There seems to be but little attention paid to breeding for any special purpose. The sheep are usually shorn but once a year, during April or May, although in some localities the fleece is clipped twice a year, during the months of April and October. The shearing of sheep is considered a part of the regular farm work, and is done either by the owner or his hired man. The wool, if not too burry, is tub-washed and then sold to the local merchant or factory. The merchant, when he has secured enough to fill one or more sacks, sells it to some woolen mill or the cotton buyers who visit him, although a great many consign it to St. Louis wool commission merchants. It is seldom that the sheep-owner ships his own wool. The bulk of the wool produced is of a medium grade and the tub-washed brings from 30 to 35 cents a pound; for the unwashed, the owner receives from 18 to 22 cents, except for the heavy, burry, wool, which is sold for whatever it will bring, and the amount is very small. The fleece of the common sheep runs from 2½ to 4 pounds, and the improved or better grade sheep considerably more, depending on the amount of improvement. The mature wethers and ewes which are disposed of as muttons are sold to local butchers, who pay from $2 to $3.50 per head, or the market price per pound. About 20 to 30 per cent of the flock is disposed of in this way annually. The mature sheep range in weight from 60 to 100 pounds, with an average of not much above 75 pounds.

The average wages paid for farm labor is about $15 per month and board, or $25 without board, and by the day 75 cents; and the cost per sheep a year, including all expenses, varies greatly, owing to the care and attention given. The estimates reported by sheep-owners range all the way from 10 cents to $1, but the average for the State is not much in excess of 25 cents per head a year.

The local advantages for sheep husbandry consist mainly of the large amount of cheap feed, long grazing season, mild climate, even temperature, good water, abundance of feed during the summer season, good local home demand for mutton, nearness to St. Louis market, and cheap labor; also the little expense required for wintering the sheep.

The local disadvantages encountered by the sheep-raisers of the State are cockle-burs and the want of legislative protection against the ravages of dogs. In some portions of the State there is too much wet weather during the winter for the comfort of the sheep. While labor is quite cheap, the men as a rule are unreliable and inexperienced in the management of sheep. Disease is practically unknown among them, and

they mostly enjoy good health until they die of old age or are disposed of as mutton to the local butchers, or made food of by the dogs and wild animals. The latter are becoming extinct, but the dogs are on the increase. There is some occasional complaint, especially in the lowlands, from foot-rot, grub in the head, or tubercle of the intestines; however, where sheep receive proper attention such affections are rare.

The sheep industry is neither declining nor advancing; it is in about the same condition that it was at the close of the war. It is the belief of the best informed sheep-raisers that the industry has a bright future, as the natural advantages and conditions are exceptionally favorable. But before it advances materially methods now in vogue must be greatly improved and sheep-raising made something more than a side issue. Whenever flockmasters have a sufficient number to require a herder sheep-raising is quite profitable.

The most successful methods for profitably conducting the business is to use nothing but pure-bred rams, such as the Merino or Shropshire, and, where it is practical, to inclose a large tract of the hilly land, which is quite cheap, and to seed a portion of the cultivated land to tame grasses or forage crops, especially Bermuda grass. This Bermuda grass furnishes an unusual amount of green pasturage from April 1 to December 15. There is no question as to the profitableness of raising sheep, provided they have attention, and no other pursuit will pay so well for the money invested or the attention given. During winter provide feed, such as sorghum or the cowpea, which is easily produced here in large quantities. It may be planted after oats and wheat have been harvested and a bountiful crop secured. Cotton seed, which is abundant and very cheap, makes an excellent winter feed. Two or three cuttings of red clover can be secured, yielding from 2 to 5 tons per acre; millet also yields a large tonnage per acre. Another plant which furnishes more green or dried forage than anything else produced is the teosinte (*Uclousena luxuriens*). The seed, however, will not mature. Cotton seed can be bought for about $8 per ton. All kinds of grain and grasses and root crops can be produced so abundantly and cheaply that it seems a great extravagance to have this large amount of excellent stock feed go to waste, as much of it does every year. Consequently, sheep-raising should be encouraged and so managed as to utilize these products. And if the sheep-owners can not secure legislative enactments to protect them from the ravages of the dogs, they should try the merits of strychnine and shotguns, and in no wise stint the use of them. Briefly, the best methods are, to increase the number and improve the quality of the stock and give them proper care and attention, and prepare the wool for the market in good merchantable shape. If this were generally done by the sheepmen of the State, it would not be long until Arkansas would become especially noted for the superiority of both its wool and mutton products, as well as famous for the profitableness of the industry.

PERSONAL EXPERIENCE AND OBSERVATION.

Experience is the best criterion for demonstrating the adaptability of any particular country for any branch of industry. The writer has taken pains to collect information showing what has been the experience of sheep-owners, as well as their observations and opinions regarding the business.

The following paragraphs represent the different sections of Arkansas and will furnish practical pointers regarding the industry which are graphic illustrations of certain features of the business, such as are difficult to show briefly in any other manner. They contain much information in little space, and will bear careful perusal by those who desire pertinent information regarding the sheep industry of Arkansas.

John K. Gibson, Powhatan, Lawrence County:

The sheep industry in Arkansas has had a backset for some years past, but within a few years the people have taken an interest in the industry—prompted by the high price of the mutton, as well as by reason of the profits in the wool grown. The sheep as a scavenger for brambly and ugly thickets is beginning to be prized. Sheep will eat and destroy grass and shrubs that no other grazing animal will. I think our climate and country are well adapted to sheep-raising, and it would prove a great success if handled scientifically.

Frank Fealy, Charleston, Franklin County:

In 1875 I purchased in the northern part of this State 455 sheep, and turned them out on good prairie range. The next year I sold 76 of them for mutton at $2 per head; and in 1879 I sold 210 mature sheep and 80 lambs for $700, and then quit the business because dogs were too numerous for the sheep business. During the four years I owned sheep I enriched my orchard with the carcasses of 65 worthless sheep-killing curs.

M. A. Harper, Gurdon, Clark County:

Most farmers have a few sheep and let them run out in old fields, and pay but little attention to them, letting them shift for themselves, and only feeding three or four months of the year. Some of the farmers shelter their sheep, while others do not. Sheep would do well in this State, especially in the hilly and mountain portion, but will not do so well in the bottoms or lowlands, except where the land has been generally cultivated or in tame pasture.

J. L. Bowen, Stark, Yell County:

My experience with sheep is that I lost the best opportunity I ever had when I sold out for the purpose of raising cotton, and as soon as I can make another start I will try it again. The cross of the common native sheep with full-blood Merino is the best, as you double the increase of the weight of wool and carcass. In Faulkner County, where I formerly lived, there are larger flocks than in Yell County, although we have the advantage of free range and cheap lands. Mutton and wool can be purchased cheaper here than in any place I have ever lived.

E. D. Rickey, Carlisle, Lonoke County:

I have lived here seventeen years, and previously in Ohio and Michigan. The sheep industry here practically amounts to nothing. I am about the only sheep-owner that has kept good the original number I started with. Eight years ago I brought 200 young Cotswold ewes here from Elyria, Ohio, and used the best Merino

bucks I could find. The first year I raised 175 lambs, but at the next shearing I only had 215 fleeces; the second year I raised 100 lambs. The largest number I ever sheared was 222 sheep. We are cursed with numerous dogs; besides, we have the big black and gray wolves, which secrete themselves in the swamps and bottoms. There is very little encouragement for sheep husbandry in this section, for the reason stated, together with our rainy winters; however, if the country was in a better state of cultivation, had better drainage and suitable shelter, sheep would do fairly well.

O. L. Dodd, Mountain Home, Baxter County:

I commenced with 8 Merino ewes. Stock within ten years increased to 200 head of sheep, after selling each year all the mutton, wethers, and wool. I consider the sheep industry the most profitable investment that a man can invest money in this county of Baxter.

S. M. Dyer, Dyer, Crawford County:

There have not been many sheep raised here since the war. The people turned their attention to cotton, though sheep do well here, with very small cost. They make their own living in the woods, except in winter, when they are fed on cotton seed. About twenty years ago there were 2,000 sheep brought here from Ohio and herded in a swamp, and all died in the spring from some disease.

J. S. Stotts, Jonesboro, Craighead County:

There are very few sheep in this portion of the State, and those few are common scrub stock. No one makes it a business. What few sheep there are run out and no attention is given to them in regard to breeding. What wool we have brings the biggest market price. Sheep do well here, and if anyone would give it the proper attention the industry would pay.

W. A. Yarnell, Searcy, White County:

I know of no better opening for the profitable investment of money by farmers of small means, say from $1,000 to $5,000, than in the stock business in the hilly or mountain region of Arkansas for sheep, and in the valleys and rich bottom lands for hogs, cattle, and horses.

J. T. Hannaford, Morrillton, Conway County:

Bermuda grass will grow well on almost any land here, and is the best permanent pasture for summer. And for winter feed cotton seed crushed with ear corn makes good feed, and I believe sheep can be pastured and fed more economically here than any other stock. On a mountain place I kept about 200 head of Merino and Shropshire sheep.

John B. Watson, Jersey, Bradley County:

The sheep industry is one that has had but little attention shown it in this county until lately. Our people are beginning to see the profit in wool-growing, and there were some few thoroughbred sheep brought in during the past two years. Sheep have but little attention paid them, but when they do, the profit is good. They are allowed to graze on the commons, and often are not penned for weeks during the spring and summer except for shearing, and even with this careless way they pay a nice profit. Cotton is king here, to the detriment of all other industries. But the time is near at hand when sheep will be made profitable here. I have some lambs that would sell for $2.50 now; so have some of my neighbors.

W. D. Clements, Rover, Yell County:

This is a mountainous county, the larger per cent wild lands infested with wolves;

nobody engaged in sheep-raising except for home use; no flock over 50, and very few that large; the average not above 10. They do well here; rarely ever diseased; live on the wild grasses, with very little feed in the winter. No improved sheep; all scrubs. Some Cotswolds brought in did well until killed by wolves. No mutton raised for market, but once or twice a year some one comes in and picks out the best muttons and drives to Hot Springs. All the wool grown finds a market here at home. I think with the natural advantages, together with the mildness of the climate, it could be made profitable.

A. B. Hudson, Hazen, Prairie County:

My flock has varied from 10 to 75 in number in twenty years past. A few sheep cared for here do tolerably well, but to run at large on the slushes in spring they contract colds, have a cough and running at the nose, and in summer a fly deposits a grub sometimes which works up into the head and, I suppose, kills them. I have seen them die suddenly when fat, and found these worms or maggots in the nose. I now keep but few, none but young ones; have a dry pasture; they drink but little water if dews are heavy; shelter from the cold rains in spring; watch young lambs closely for one or two days. I kill one when needed at home, and sell the balance at Hazen readily at 7 and 8 cents. Two years ago a St. Louis drummer took my wool at home at 40 cents cash. I bred last year from a graded buck. I expect to get a good one soon; will have to send off. Others have tried larger flocks here without success.

A. P. Robinson, Conway, Faulkner County:

I began with a flock of about 40 Cotswold ewes and 3 rams of same breed. I kept them within my fences and sheltered them in bad weather and at night. Hogs and dogs so depredated on me that I saved only 5 lambs next spring. I have found it impossible to guard them, and I have now about 20 ewes and 10 lambs only. Every negro in this vicinity owns about four half-starved dogs; the more of them you shoot or poison the more numerous they are. The second spring I did not save a lamb. The rams, as well as some ewes, died of intestinal tubercle. A neighbor of mine has had the same experience and has sold the few sheep that the dogs left him. Another neighbor, with more faith than I have, lost 15 out of a flock of 80 in one night. I believe that if sheep-raising was pursued here as a business it would be a very profitable industry, but now it is merely incidental to raising cotton. This is the main product, and is rapidly ruining the country in this vicinity. I know no farms here whose cotton did not cost them 2 cents per pound more than they received for it. It is true that they were under mortgage to merchants and had to pay enormous prices for their supplies, but even at cash prices they could save nothing.

TEXAS.

Sheep husbandry in Texas, like all other industries of importance in that great State, is on a characteristically immense scale. It is necessary to form some idea of the area and extent of the State before one can appreciate fully what it means to be engaged in a pastoral occupation in this portion of the great plains. The area of Texas is 265,780 square miles, or 170,099,200 acres. Its boundary lines measure over 4,000 miles. The Gulf of Mexico touches 500 miles of its southern border. Texas lies mainly between 24° and 35° north latitude, and between 17° and 30° longitude west from Washington, D. C., ranging in altitude from sea level to 5,000 feet above. The country rises gradually from the Gulf toward the northwest until it reaches an elevation of

from 3,000 to 5,000 feet in the Pan Handle and Staked Plain, and that part of the State about El Paso. The rivers have their rise here and flow southeast to the Gulf of Mexico.

The eastern portion of the State is known as the timber belt, the central portion as the grain belt, and the west, with its diversified topography, is the great grazing section. The wool-producing region is mainly in the west half of the State, south of the Texas Pacific Railroad, although sheep-raising is carried on in a number of counties located in the grain belt.

The climate of Texas is particularly favorable for sheep husbandry. Sheep feed out the whole year, and shelter is the exception rather than the rule. The cost of keeping in winter is not much in excess of that during the summer months. The temperature is even; sudden changes rarely occur. The nights in summer are uniformly cool. In the central and southwestern portions of the State it is rarely that the thermometer records a fall below 20°. The Signal Service reports show that for a series of years the average number of days in winter at San Antonio when the mercury goes below the freezing point is 14. The average number of clear and fair days during the year at the same place is 287. The statistics of climate at this point are fairly expressive of most of the wool-producing area of Texas, except in the higher altitudes.

There are two hundred organized and forty-five unorganized counties in Texas. Sheep are raised in one hundred and eighty-three organized counties of the State, and last year the unorganized counties reported 500,000 sheep for taxation purposes. The counties of Brazoria and Wood report the lowest number. The counties which reported less than 1,500 each last year were Archer, Austin, Bastrop, Brazoria, Caldwell, Calhoun, Camp, Collin, Colorado, Fort Bend, Galveston, Gregg, Guadalupe, Hardin, Henderson, Jackson, Liberty, Marion, Montague, Montgomery, Ochiltree, Orange, Rockwall, San Jacinto, San Patricio, Somervell, Trinity, Tyler, Upshur, and Wood. The counties which lead in the production of sheep are in the order named as follows: Webb, Encinal, Duval, Starr, Valverde, Maverick, McCulloch, Kinney, and Uvalde. Each of these counties reported in excess of one hundred thousand head to the comptroller of the State for taxation in 1889. The counties which reported in excess of fifty thousand head were Bosque, Kimble, Sutton, Zapata, Nueces, La Salle, Bandera, Edwards, Hamilton, Coryell, Menard, Tom Green, San Saba, Coleman, Crockett, Kerr, Mitchell, Williamson, Concho, Burnet, Runnels, and Lampasas.

There are three things that the flockmasters of Texas as well as the other range States and Territories need, and they are stringent laws, rigidly enforced, to eradicate the scab and to exterminate wild animals that are destroying the flocks. In addition to these necessary State laws reasonable protection against competing foreign wools should be afforded by the General Government. Let these things be assured and the sheep industry would receive an impetus that in a few

years would more than treble the present production and encourage a decided and rapid improvement of the stock.

There is no single branch of agriculture that is so poorly understood by the people at large as sheep-raising, nor do they consider to what large proportions it is capable of being developed. All that has been learned in this direction in the past has been taught by dear experience; many a worthy worker has had to abandon it, after the loss of capital invested, simply from the want of proper information. The habits of sheep, the character of soil, of grass, and of weeds, and the best way to feed, are important features that call for very careful study and require many years of constant attention on the part of the successful grower to understand. To illustrate: In Texas, in different sections, as well as in other States, there is a natural growth of weeds that cause disease, often fatal when eaten by sheep. The early beginners were ignorant of this and suffered accordingly, but after years of investigation the discovery was made. Again, the opinion was prevalent that in a warm climate, like that of Texas, there was no necessity to provide shelter for sheep in winter; and this also caused the pioneer who settled on the bleak and unprotected prairies very great losses. And yet, notwithstanding these various drawbacks, the sheep industry has made creditable progress. In the short period of twenty-four years it has developed the capacity of a sheep to produce wool, from an average of 2.68 pounds per head to an average of 6.08 pounds, increasing the wool product fivefold and over, although the number of sheep has not much more than doubled. It is difficult to imagine what might have been the present condition had it not been for the losses by flockmasters while learning their business.

The greater part of the wool produced in Texas from 1870 to 1880 was of a nondescript character, but that condition does not now exist. When the tariff of 1867 gave an impetus to sheep-raising there was a demand for breeding ewes that forced prices up abnormally and led many growers to purchase the common Mexican sheep to begin with. From these they raised flocks which gradually improved from coarse-wooled sheep, shearing about 1 pound each, to fine-wooled sheep producing 5 to 6 pounds each. This was done by the use of improved sires raised in the older States, and now nearly all the base Mexican blood has been improved.

It is the opinion of sheepmen generally that, in the absence of State protection against scab, the United States Bureau of Animal Industry could very properly take hold of the matter and stamp the disease out as thoroughly as it has pleuro-pneumonia and other infectious diseases, and thus save thousands of dollars annually to the Western flockmasters.

SHEEP AND WOOL VALUE AND NUMBER.

After a careful investigation, with facts from every reliable source of information and by conference with sheepmen, the figures herewith presented show as conservative an estimate as can be secured except

by actual count for the close of the year 1890. The number of sheep, all ages, is 5,135,585, with an average value per head of $2.50. The production of wool for 1890, in round numbers, amounts to 30,000,000 pounds, or 5.85 pounds average per animal.

The wool clip of Texas met with ready sale and brought the highest current prices realized in the West during 1890. The spring clip is the first wool on the market and is always in good demand, while the fall clip comes in for a late market, after the bulk of northern wools has been sold. Most of the Texas wool is carried by the following railroad lines: San Antonio and Aransas Pass Railroad, from June 1 to November 30, 1890, received for shipment 5,778,328 pounds; the Southern Pacific lines for the same period received 5,428,297 pounds; and the Gulf, Colorado and Santa Fé Railroad received for shipment 9,010,677 pounds during the first nine months of 1890. The number of sheep on hand in Texas at the close of 1890 represents only a slight increase over last year; the unusually large sale of mutton sheep and stockers was about equal to the increase of the lamb crop. Over 100,000 Texas sheep were received at the Kansas City stockyards during the year. Every sheepman took advantage of the demand and disposed of most of the undesirable animals.

The following pages give a detailed description of the industry by districts; also a chapter on Angora goats and one on the depredations of wild animals.

NORTHEASTERN TEXAS.

Northeast Texas is not generally known as a sheep country, because it has not now the large flocks which are characteristic of the State. It is, however, somewhat conspicuous, because of the high prices realized for wool produced there. The flocks are small, ranging from 100 to 500 sheep. The flockmasters as a rule are not engaged exclusively in the business of sheep-raising, but are usually what may be termed general farmers. The flocks in this section are the descendants of sheep originally brought from Missouri and Arkansas, consisting of natives or grade Merinos of fair size. As a rule they are inferior, and sheepmen who continue in the business in this part of the State must raise better stock and improve their flocks more rapidly than they have in the past. There is a tendency now to handle the mutton breeds more and to direct the breeding to both mutton and wool, not limiting attention to wool as much as has been done in the past. As the country is not adapted to large holdings, the disposition to handle more profitable sheep is certainly an encouraging step in the right direction.

This part of Texas, lying adjacent to the timber belt, has been settled a long time, yet comparatively a small area is under cultivation, although a large portion is under fence. Timber is abundant, affording grateful shade at certain seasons of the year, with here and there

an open stretch of prairie. The soil is uniformly of a sandy loam. The pastures consist of native prairie grasses, with occasional fields of tame varieties. The native grasses grow in abundance, both on the open prairie and in the timber. The open prairie is smaller in area than the timber pastures, especially in Hopkins County, which is the representative sheep-raising county of northeast Texas. The timber consists principally of oak, ash, elm, and hackberry. The water supply for stock is mainly from creeks or pools during the grazing season. Excepting in very dry summer, surface water is abundant and accessible for watering stock, and wells are used very little for this purpose.

Improved sheep brought in from other States seem to acclimate quite readily and give satisfactory results for breeding purposes. The improved sheep that are now brought in consist generally of pure-bred Shropshire, Cotswold, Southdown, or Merino rams. These, with the best selected grade rams of their own raising, constitute the stock rams used by most of the sheepmen in this section. There are too few pure-bred rams in use.

The common method of allowing the flocks to run at will without a shepherd attendant accounts for too large a loss of sheep from dogs and exposure. The loss from dogs alone ranges from 5 to 20 per cent, as shown by a number of reports received from there, while the loss from wolves is small in comparison. The loss from exposure ranges from 5 to 10 per cent, and usually occurs during the lambing season or an occasional storm. Experienced sheepmen have, however, provided shelter for winter, which consists of sheds closed on the north and open to the south, with boards or brush and straw to cover them. These afford ample protection from cold rains and severe winter weather.

Owing to the small size of the flocks, the rams, wethers, and ewes are permitted to run together the entire season, while in large flocks farther west, in the open range country, the ram is not permitted to remain with the flock much over thirty days, and the ewe and wether flocks are usually run separately. Here each ram is given from forty to fifty ewes, and runs with them and the rest of the flock all the time. Only about 5 per cent of the ewes fail to breed and drop lambs, although in some cases as many as 10 per cent fail to breed. Sixty per cent is the minimum number of lambs raised, while the average is about 80 per cent, as summarized from reports received from representative sheepmen. The grazing lands here are owned by sheepmen. There is no free range excepting some unfenced land owned by nonresidents, which is used in common by the stockmen during the grazing season.

The custom has been to shear most of the flocks twice each year—in the spring months, April and May, and in the autumn months, September and October. Owing to the expense of shearing twice, the number shorn in the fall is growing less from year to year. The average annual clip is about 5 to 6 pounds per animal. The bulk of the wool is a bright medium or a medium fine. The net price realized by

the grower for the last four years has been about 24 cents a pound. The distributing point for the wool of this section is Sulphur Springs, the county seat of Hopkins County, where a well-organized association of sheepmen is maintained. The association is made up of wool-growers of Hopkins and adjoining counties, who coöperate in selling their wool. Each member prepares his wool at the time of shearing in good marketable shape and then takes it to the temporary storeroom at Sulphur Springs, where it is sorted and graded. When the entire clip of the association is in, word is sent to the wool-buyers, who bid on the various lots, and the entire clip goes to the highest bidder. The choicest grades at the 1890 spring sales brought 31½ cents, the highest price paid for wool in Texas last year. It went to a St. Louis firm (S. Bienenstock & Co.), who have been the highest bidders for this clip for several years. The members of this association claim that they produce the best wool in Texas. This is perhaps true as to the particular grade of wool, because it is not produced elsewhere in the State in sufficient quantities to attract the attention of buyers. The secret of the high prices realized is the care in properly preparing the wool for market, the small shrinkage of their class of wool as compared with the bulk of Texas wools, and their method of selling the same in bulk to the highest bidder, thus getting the full benefit of competition and the top of the market.

The flocks of this portion of Texas are decreased annually from 20 to 25 per cent by the sale of wethers and stock sheep, the stockers going to the more extensive sheep districts of the State, and occasional sales to Northern flockmasters who desire to replenish their stock. The owners realize from $2.25 to $2.50 per head for their stock sheep. The mutton sheep or fat wethers go mainly to Kansas City or Chicago to the packers. St. Louis is receiving more than heretofore, and the indications are that markets will receive increased shipments hereafter if the sales continue as satisfactory as those of 1890. The average weight of the wethers sold ranges from 85 to 100 pounds.

The annual cost of raising sheep in northeast Texas, including all expenses, is 30 cents per head; losses from any source not considered in the calculation. Yet, notwithstanding the profit generally realized in sheep-raising in this part of the State, it is a fact that the industry is gradually declining, for the reason that the prairie land is being overpastured and fenced, and tame grasses are not cultivated to an extent which will replace the native grasses and afford sufficient pasturage; so that sheepmen are reluctantly reducing their flocks rather than to hire additional pasture from their neighbors and run the risk of ravages from dogs, which are entirely too numerous in this section and add a hazardous feature to the business. These curs are the most serious drawback encountered in this section. With the exception of this difficulty no class of live stock gives better returns for the money invested than do sheep. So the decline in sheep-raising here is charge-

able to dogs and a want of harmony between the flockmaster and his neighbors on the dog question.

The natural advantages of this section of the country are particularly favorable in nearly every respect for raising sheep. Good grazing continues most of the year. Stock of all kinds are uniformly healthy, and disease among sheep is practically unknown. Cases of scab among sheep are becoming very rare.

CENTRAL TEXAS.

Bosque County is the principal county of central Texas, and a representative one for this portion of the State. The sheep here are mainly high-grade Merinos, which generally shear heavy fleeces of larger average weight than those in any other section of Texas. The flocks generally number from 1,000 to 2,000 sheep.

The general character of the soil is known as "black waxy;" especially is this true of the level lands and valleys along the streams. The table-lands are in many places covered with brush and nutritious native grasses. At least one-half on the central part of Texas is well adapted to agricultural purposes, and it produces good crops of cotton and grain. Forest trees, live oak particularly, are numerous on the black soil, and abundance of brush grows on the upland, affording shade in summer and more or less protection from the occasional severe weather during the winter. In addition to the natural shade, there is an abundance of running water conveniently supplied by the streams and springs. During times of drought, or when the stock is not convenient to the streams and are grazing on the upland prairies in summer, water is supplied in abundance from deep wells.

The loss of sheep from exposure or from wild animals is generally not large, yet at times it amounts to 10 to 25 per cent of the flocks. With the prudent or experienced sheepman there is little excuse for losses from exposure, but the ravages of dogs, wolves, and other wild animals is a vexed source of loss that is difficult to avoid, unless the sheepmen are numerous enough in a locality to mutually protect their interests by local regulations. Even then it does not guarantee sure and ample protection, although it reduces the amount of loss.

Sheep brought in from the North during the first year do not thrive as well, and are not in as good flesh, as the home raised until they become acclimated. The wool becomes lighter in density and in color. The ewes that are brought in commonly lose a larger per cent of lambs during the period of acclimation. Sheep are so easily acclimated that if they only had special care the first season there would be no deleterious effects from the change of climate. But they are at once put in the flocks with the home-raised sheep and subject to the same treatment, which in most cases is a complete change, and they lose in condition; however, no loss of any consequence occurs from this cause under ordinary treatment. In case of pure-bred rams the treatment is differ-

ent. They have better care, but many owners breed them too heavily the first year. It is a common thing to give such rams 100 ewes, so as to get even the first year. The rams in use in central Texas are principally Merinos, either high grade or pure-bred, 2 years old and upward. From two to three bucks are given to every 100 ewes during the month of October, remaining with the flocks from four to six weeks. In good flocks properly handled about 90 per cent of the lambs dropped are raised, and about 10 per cent of the ewes fail to breed. Sometimes the loss of lambs is greater, but it is needless with proper vigilance and management.

Sheep run out most of the year without other shelter than such as nature provides, yet there are days during three or four months of fall and winter when shelter is absolutely necessary, and most of the prudent and experienced sheepmen have such shelter. It generally consists of a shed open to the south, well covered with boards, and usually located on the south side of timber or slope. Some of the flockmasters have provided span-roofed sheds, barn shaped, which are well ventilated, and can be closed up, so that perfect protection is insured against the most severe storms which may occur in winter. These sheds are also utilized during the lambing season and at shearing time.

Wool is the main object in sheep-raising here, although since mutton has come into more general demand and brings remunerative prices much more attention is directed to the mutton-producing features of the industry, and the mutton qualities are considered in the selection of the breeding stock. Mutton will not become as much an object as wool with sheep-raising so long as the product must be sold in distant markets. The long haul and high freight rates discourage any such tendency. Owing to the demand for mutton, more sheep were sold from Texas flocks during 1889 and 1890 than ever before. These sales consisted of aged ewes and wethers equal in numbers to the increase by the lamb crop. There is at present a decided tendency, however, to breed for mutton qualities as much as possible without sacrificing anything in the number of pounds of wool. The breeding stock is selected and bred to secure as large size and smooth bodies as possible. The small-sized and very wrinkly Merino rams are not so much in demand as formerly.

The sheep in central Texas will shear from 6 to 9 pounds, or an average of about 7 pounds. The wool is generally sold as "light fine" or "fine medium," and some lots as "heavy fine." The wool is mostly sold at the ranch, and this season it netted the grower from 18 to 22 cents a pound. It is bought by local merchants or representatives from St. Louis houses. A considerable number of the sheepmen consign their wool to commission merchants in St. Louis, Philadelphia, and Boston. The best market for mutton in less than car lots is that of the local butchers. For car lots Chicago, Kansas City, and St. Louis are the chief markets. About one-fourth of the flocks are now regularly disposed of either for mutton or as stockers. The gross weight of

sheep sold for mutton ranges all the way from 60 to 90 pounds, an animal seldom exceeding 100 pounds. The shipper, after deducting freight, yardage, feed, and wages of man in charge, realized all the way from about $3.30 to about $4.20 per 100 pounds. The stock sheep are generally bought by speculators, who pay the raiser this year from $2 to $3 per head.

Most of the flockmasters in central Texas own land on which their sheep graze; others lease State or railroad lands, paying from 6 to 10 cents per acre annual rental. Herdsmen receive wages of $20 to $25 per month, and many of them board themselves. Sheepmen of this section estimate that the average annual cost, including all expenses of handling a sheep, varies from 40 cents to $1, making the average cost range about 60 to 80 cents per head.

The natural advantages of central Texas for sheep-raising may be summarized briefly: The abundance of native and nutritious grasses of many varieties, which afford pasturage nearly every month of the year; good water and plenty of it in the numerous creeks and ever-flowing springs, and when running water is not convenient a plentiful supply can be had from wells at moderate cost; short and mild winters; healthful climate, feed, cheap land, and low rent. The greatest disadvantages are long distances from markets for wool and mutton, depredations of wild animals, and too few improved sheep. Sheep are uniformly healthy. There are some cases of grub in the head, and tapeworm and sniffles are sometimes prevalent after exposure to cold rains. Scab is becoming less frequent every year. The sheepmen now understand generally how to prevent its outbreak by necessary precautions. "Animal Parasites of Sheep," which was prepared by the Bureau of Animal Industry, has been of untold value to the sheep industry of the Western plains, and it has been the means of saving many of our flockmasters considerable money. It should be in the hands of every sheepman on the range.

The industry is declining in some of the counties of central Texas and the sheep are for sale. There are several reasons assigned for this change. The price of land is advancing and an increased area is being used for farming purposes, consequently the pasturage is reduced and the feeding season necessarily lengthened, and frequently feed is scarce and high priced; therefore, common sheep are apt to become unprofitable property. In many counties where improved sheep are owned, the industry is looking up and the outlook at present is better than it has been for years. The range land at present is worth from $1.50 to $5 per acre and increasing in value each year. Many poor men have accumulated a fair competence in the sheep business, and some of them are changing from sheep to horses, cattle, or mules, in the belief that with the same labor they can make more money with less personal application and attention; while, on the other hand, men have engaged in the sheep business with ample capital and

have finally made a failure because they let the sheep take care of themselves and did not provide the necessary shelter or feed.

Sheepmen have demonstrated that the best methods for profitably conducting their business in this portion of the State is to start with a flock of the best sheep obtainable. The ranch should supply abundant pasturage for the year and have the necessary shelter for all purposes, either natural, sheds, or barns. It is universally the case that when a severe and unexpected storm occurs the amount of loss resulting from such exposure would provide permanent shelter. As a matter of economy, therefore, it is wise to have such provisions on every ranch. It is imperative that the breeding and handling of the stock should be done judiciously. The sheep should be fed without stint whenever the grazing is not sufficient. The animal should be kept in good condition and growing thriftily all the time from lambhood to maturity. A well-fed sheep will produce more and better wool and a larger mutton carcass than a sheep that is half starved or otherwise neglected. The sheep, of all live stock, gives more profit than any other animal for sufficient feed and pure water and careful attention. Experience shows that while it costs money and time to feed, shelter, and attend sheep properly, yet at the same time it is a judicious and profitable investment. The range used should be fenced or so secured that the sheep can graze it exclusively. It is better to have a winter and a summer range, so that each may be used only in the proper season and the flock changed every few weeks to different portions. Employ none but experienced help. Use pure-bred bucks, always giving them extra care. In central Texas feeding is necessary a part of the year, hence it is advisable to cultivate sufficient land to produce the required feed. Some flockmasters, however, do not practice this system, from belief that it is not economical. They are slow to abandon old methods and adopt others more progressive and practical, which the future success of the industry surely demands, because their brethren are successful under the old method 200 miles farther west on the open range of the unoccupied State lands, where they seldom shelter or feed, as the altitude is higher, storms rarely occur, the atmosphere is drier, and the early mesquite grass better suited to winter grazing. In central Texas the rainfall is greater and may wash the grass so that it loses its nutritious quality; but corn, oats, millet, sorghum, and cotton seed are easily produced and furnish excellent feed.

Mutton breeds of sheep are raised only on a limited scale here, but would undoubtedly do well in the hands of the general farmer who would run them in small flocks of from 50 to 100 head or even larger. The wethers could readily be sold in the local markets, or in carloads they would give much better returns than the light weights, which are now sent to Kansas City and Chicago.

WEST CENTRAL TEXAS.

Large numbers of sheep are held in western central Texas, in the region traversed by the Lampasas branch of the Gulf, Colorado and Santa Fé Railroad and the Texas Pacific Railroad, or, more accurately, that portion between 99° and 102° longitude and 29° and 32° latitude, which is conceded to be one of the best natural ranges for sheep in the United States. The sheep of this region are of Merino blood which have been bred up from the Mexican ewe basis. There are a few scattering flocks of Cotswold and Southdowns, but the Merino blood predominates in nearly every flock. Sheep are run in flocks of 1,500 head. The usual number owned by a single firm or individual is 1,500 to 15,000.

The character of the soil in the valleys is either clay or a thin black loam. The land is rolling and hilly, and the best soil produces the different kinds of mesquite grasses, also gramma grass, while on the hills the sage grass is abundant. There is considerable timber in places, as the live oak, post oak, and mesquite. Water is generally plentiful in most localities from springs and streams, although in many places wells are the only source of supply.

The principal loss of sheep is caused by wild animals, the losses from that source far exceeding those from old age and exposure together. From exposure the loss is 2 to 3 per cent, while from wild animals it is reported as ranging from 2 to 10 per cent, with an average of about 6 per cent.

Not many improved sheep are brought in from other States, except rams for breeding purposes. They do well, and their constitution is not affected by the change. The fleece becomes lighter, with less shrinkage, in this climate. Merino rams are used almost exclusively, and are permitted to run with the ewe flock during September or October, generally remaining nearly six weeks. Early lambs are preferred, but owing to the large open ranges it is unsafe to depend upon them, on account of storms that are apt to occur in lambing time. From 2 to 3 rams are given to every 100 ewes, but farther east, where the rams have extra feed in addition to the grazing, from 75 to 100 ewes are given to each ram. Owing to the extra help and care required during the lambing season, the ewes are so bred that the lambs will all come during a period not longer than four weeks. Notwithstanding the limited season for breeding the ewes there is but a small per cent of the females that fail to breed, usually from 2 to 10 per cent, an average of about 5 per cent. The proportion of lambs that are raised varies greatly in different seasons. If the lambs are weak, or if wild animals are very numerous, or a severe storm comes on, not more than 60 to 80 per cent of the lambs are raised. Owing to the invariably mild winters, shelter of any sort is rarely provided. In the event of stormy weather the sheep are placed on a south hillside or protected in some ravine or canyon. Occa-

sionally a plank shed is provided, and in exceptional instances may be seen a sheep barn with all the modern conveniences. Most sheepmen, however, regard such improvements as luxuries rather than necessities.

Every flock is in charge of a herder, whose constant duty is the care of the flock day and night. His duty consists in watching the sheep on the range, to see that they have water regularly, that none stray away, and to round them up at night in a favorable place, if a regular corral is not provided, so that he can protect them from wolves or other wild animals.

Most of the land utilized for grazing is State or railroad land, and is leased by the flockmaster at from 2½ to 5 cents per acre per annum, and some sections of land are leased for $50. The land is valued at $1.50 to $3 per acre.

Not more than one-half of the number of sheep in this district are shorn twice each year—in the spring, in the latter part of April or the first of May, and in autumn again, during September and October. The shearing is mostly done by a gang of from ten to forty Mexicans, who receive 5 cents per head in addition to their board. On the arrival of a band of shearers a few loose boards are placed on the ground, and the sheep are caught and quickly divested of their fleeces, which are tied up separately and placed in sacks of 200 pounds each. The wool is immediately taken to the larger towns—railroad points—where it is stored and sold to buyers who visit the principal wool centers in this section at such places as San Angelo, Ballinger, Albany, Lampasas, and Burnet. Very little of the wool raised here is sold at the ranch or consigned to commission houses, although some of it is, and that usually goes to St. Louis, Philadelphia, or Boston. The wool grades as a light fine or a medium fine, and this year (1890) netted the grower from 14 to 22 cents per pound. The average fleece runs from 5 to 7 pounds; that of the bucks much more.

In the eastern part of this district most of the wethers and aged ewes are sold in the local markets. The car-lot shipments are usually contracted for months in advance for the Chicago, Kansas City, and St. Louis markets, or by feeders who take them to the corn-growing States to finish them for the same markets. Owing to the prevailing high prices of mutton during 1889–'90 from 20 to 40 per cent of the flocks of this district have been disposed of either for feeders or stockers. There is nothing regular in this demand for sheep. It varies with circumstances and the law of supply and demand. The average gross weight of the sheep at the market ranges from 75 to 85 pounds.

The average annual cost of raising sheep per head varies considerably, according to location and circumstances, but sheepmen generally place it at 50 cents per head, all expenses considered. But few place the cost at 75 cents. The herders receive $20 per month, board included, and tend about 1,500 sheep each. The chief difficulty which may beset the flockmaster is the extended dry season which occasionally occurs,

causing a shortage of water and grass; and constant sources of trouble and loss are the depredations of wolves, panthers, coyotes, or thieves, and prairie fires.

From 1883 to 1887 the sheep industry was constantly declining, owing to the low prices for wool and mutton, but since 1887 it has been improving each year except when farming is general and cheap range scarce. In other localities the industry is simply holding its own.

The health of sheep in this district is uniformly good, the exceptions being a few cases of scab or sometimes a case of grub in the head. It is gratifying, however, to note a probability of complete eradication of scab. By protecting the range from infected flocks and ceasing to bring in Mexican sheep, scab will soon be a thing of the past.

Experience has demonstrated that the best methods for conducting the industry here is to run the sheep in flocks of 1,000 to 1,500 head, in charge of a competent and faithful herder; change the sheep to different parts of the range about every four weeks; have good sheep; use first-class pure-bred Merino bucks of good size and with good constitutions; give the sheep careful attention, provide convenient water in abundance, and salt regularly. In cases of storm have suitable shelter.

The following language from an experienced flockmaster of Shackleford County faithfully represents the true condition of the district under consideration:

> Some six or eight years ago the sheep business in our county was conducted on an extensive scale, having about 100,000 sheep in the county. Low prices of wool and mutton broke up about three-fourths of the parties in this industry, which in the main were made up of inexperienced men. We have now about 25,000 sheep in the county. The industry is controlled by experienced men, who are making the business a success. Our experience is that it costs 16 cents to raise a pound of wool here; all that we obtain over that sum we regard as profit.
>
> Since we fenced our range in recent years we have had little or no trouble with scab. The only serious things we are compelled to contend with are wild animals. Our State pays a bounty of 50 cents per head for wolves. This is exceedingly low. If the bounty were increased to $2 per wolf they would be entirely eradicated in a short time and the industry would be materially benefited.

SOUTHWEST TEXAS.

The district known as southwestern Texas is the great sheep region, and contains most of the sheep of the State. There are more flocks of immense size owned here than in any other part. Large holdings are the rule; 3,000 sheep is about the minimum number, and from that upward. Many flocks exceed 10,000 head, and some number from 20,000 to 50,000. The north boundary of this district is Tom Green County, and all that scope of country between the Colorado and the Rio Grande Rivers, extending south to the Gulf of Mexico, is to be considered in this subdivision of the report.

The class of sheep found in southwestern Texas is very similar to those in other portions of the State, except that they have more of the blood of the Mexican sheep, which is the foundation of most of the

flocks in this section; they have been improved and bred up by the use of Merino bucks, so that older flocks consist of what is known as grade Merinos. In the vicinity of San Antonio and in the eastern part of this district there are a few small flocks of pure-bred and grade Southdowns, Shropshires, and Cotswolds.

Nearly every character of soil is represented by the grazing lands of this region—everything from the rich arable land to the dry and gravelly highlands; also freestone lands, mesquite prairies, prickly-pear flats, limestone, and the black waxy soils of the Rio Grande Valley. There is considerable black prairie and clay land, as well as rocky and mountainous; in fact, all kinds of soil and surface, from the mesquite flats and rolling prairie to hills, table-lands, and mountains. And yet all of this land can be utilized by the sheep-raiser. The open prairies and table-lands are used for summer range, and the woody or brush country and the valleys for winter range. In Menard County there is considerable black loam soil, while in DeWitt County there is a good deal of light sandy soil, as well as black sandy, with calcareous subsoil. The grass is abundant on good soil and sparse on the poor—the rocky and hilly land. Water is supplied by running streams, natural water holes and springs, or from deep wells, some of which are bored to the depth of 200 to 300 feet. Many sheepmen dam the creeks in order to have on hand a constant supply. Others excavate reservoirs for the same purpose. In the extreme south end of this district there are many lagoons that afford water at all times, unless for a short period during a protracted drought.

In most of the counties in this section there is some timber, consisting of live oak, mesquite, hackberry, and chaparral. In some counties there is no shade whatever. The varieties of native grasses consist of the different species of mesquite, gramma, and sage grass.

The losses of sheep from wild animals in southwestern Texas are enormous, notwithstanding the constant guard of a herder. The loss would be very much greater were it not for this constant vigilance. From special reports received from representative flockmasters in the different counties embraced in this district, it appears that not a single flock escaped this depredation. The amount of loss of course varies, covering a range of from 2 to 20 per cent. The average loss in the counties of Cameron, Maverick, Bexar, Bandera, Jeff Davis, Valverde, Presidio, Medina, and Uvalde is placed at 10 per cent. One report from Bexar County estimates the writer's loss from strays and wild animals at 20 per cent. The animal that commits most of the serious depredations is the wolf, although the mountain lion and wildcat do considerable damage. It is a significant fact, however, that those counties which have the greatest loss from wild animals report little or no loss from exposure, and *vice versa*. The heaviest loss from exposure in this district was in the counties of San Saba, Maverick, Bandera, Llano, and Lasalle.

Sheep brought into this district from other States suffer some during acclimation the first year, but if properly cared for the first winter they seldom show any deterioration either in constitution or fleece. But if they are subjected to the usual treatment the wool becomes dry and harsh, and some of the animals become debilitated, take fever, and die. This is true frequently of sheep brought from the States north and east, but rarely the case with those brought from California. The change of climate affects Merino sheep brought in from other States about the same as it does man coming from other localities. No permanent effects are noticed, yet nearly one year is required for thorough acclimation.

The class of rams in use are mainly Merino, Spanish, or French, purebreds and grades, although not many of the French rams are in use, except in an experimental way. The breeding season for this district is from September 15 to November 15, the rams remaining with the ewes from four to six weeks; however, some of the flockmasters breed their ewes during May or June. At some of the ranches where they have high-priced and well-fed thoroughbred Merino rams they breed to each from 35 to 75 ewes, but the average for rams of all classes of different ages is 100 ewes for every 3 rams. The sheepmen buy rams from eighteen months old and upward, and use them as long as they are fit for service. Occasionally middle-wool rams are used, such as Southdowns or Shropshires, but not many of the English breeds are used for improving the sheep. The climate is too warm, and they are too heavy to stand the travel necessary in grazing; besides, they do not herd together in flocks like the Merino or Mexican, or their grades. The average number of lambs varies from 50 to 80 and as high as 90 per cent. The number of ewes failing to produce lambs varies according to condition and circumstances; an average for several years would vary from 7 to 10 per cent.

There is but little feed or shelter provided in this region for sheep, except for stock rams or weak animals. In that part of the district where crops are grown and good range not abundant, some feeding is done in the winter months. The ordinary shelter is what nature provides, such as a south hillside, oak groves, ravines, bluffs, chaparral, or brush pens. Sometimes provision is made for the thoroughbred sheep by building plank or brush sheds open to the south, or placing the flock on a portion of the range having timber or brush.

The grazing lands used in this part of Texas are partly owned and partly leased. The State lands are leased at 4 cents per acre. Some of the sheepmen own part and lease the rest of the range. The value of land is placed at about $2 per acre. The most desirable ranches are often leased as high as 5 to 10 cents per acre. Owning land is coming more into favor every year, and especially now that the sheep industry is more profitable.

The main object of the flockmasters has been to produce wool—the production of mutton is incidental—but owing to the prevailing high prices for mutton since 1888 there is a manifest tendency to breed with

reference to both wool and mutton, as every sheepman can spare a certain per cent of wethers and aged ewes from his flock every year.

It has been the general custom to shear sheep twice a year, during the months of April and September, or when shorn but once it is during April or May. The shearing is usually done by a gang of Mexican shearers, who have a captain or foreman that contracts to do the work at prices ranging from 3 to 6 cents per head, the amount depending on who boards the shearers. After shearing, the wool is immediately sacked and shipped to the nearest market, usually San Antonio or Galveston, where it is stored for better prices or is sold on commission. The class of wool produced is "medium fine" or "light fine," excepting a small per cent of coarse wool. The prices received for this wool in 1890 varied from 13 cents to 20 cents per pound. The net price realized by the producer is about 2 cents a pound less than that. The annual clip ranges from 3 to 7 pounds, an average of 5 pounds.

Since 1888 from 10 to 20 per cent of the flocks has been disposed of annually, either for muttons or stockers. The stockers in 1890 brought $1.75 to $2.50 at the nearest shipping point, and the muttons brought from $2.50 to $3.75. The gross weight was from 60 to 90 pounds.

The average cost of maintaining and handling sheep in this district is 50 cents per head for the year, not considering the losses in the flock. In some cases the cost is as high as 75 to 90 cents per head. The Mexican herder is not a high-priced worker. Some of them work by the month for $7 in Mexican money, 2 bushels of corn, 4 pounds of coffee, 4 pounds of sugar, and a goat occasionally. The average wages range from $10 to $20 per month, and on the Mexican border still lower. In the larger holdings a superintendent has charge of the various flocks and herders, and he frequently receives $1,000 a year.

The natural advantages of this region for sheep husbandry are the large areas of cheap grazing lands, which produces abundance of grass suitable for grazing the year round; a climate dry, mild, and well adapted to the business; little or no winter; absence of snow and blizzards; plenty of water, natural shelter, cheap labor, and good local wool markets.

The disadvantages and obstacles may be briefly mentioned as wild animals, failure to enforce scab law, drought, incompetent help, local favoritism to cattlemen and horsemen, thieves, and needle grass.

Diseases are not common, yet there are cases of scab, murrain, red-bladder in the coast country; screw worm and lumbriz in lambs.

The sheep industry of this district declined fully one-half from 1884 to 1888, since which time it has gained steadily. The number of sheep in Texas would quite possibly have been double, had it not been for discriminating State laws in favor of other stock, the abolishment of free range, unstable prices for wool, etc.

The best method for handling sheep to-day in Texas is to own the ranch, reduce the number in the flock, improve the quality, change range frequently, avoid scab, raise more lambs, and have more competent help or none at all.

DEPREDATIONS OF WILD ANIMALS.

The greatest and most discouraging obstacle encountered by the sheepmen of Texas is that omnipresent evil, the depredations of wild animals. From this cause alone the flockmasters suffer an annual loss of sheep and goats amounting to over $500,000. The increasing loss of calves, colts, and poultry are not considered in this conservative estimate; and yet it is a significant fact that bloodthirsty brutes are increasing in numbers from year to year—the coyote particularly. The small flockmasters in many counties are abandoning the business on account of wolves, and in such localities the land, instead of advancing in value, is at a standstill or is depreciating. It is a serious matter to the sheepmen, and it is hoped that the present agitation of the subject may result in prompt relief and stop the slaughter of live stock that is damaging the animal industry of the western ranges to an extent indeed alarming.

The Texas wolf and bounty law is a failure. The act in force at this writing is as follows:

That the county commissioners of the several counties within the State may issue county warrants to the person killing in any amount not exceeding $3 for every wolf, coyote, wildcat, and fox; and 5 cents for each rabbit that shall be captured and killed in the said county. No person shall be entitled to receive any bounty as set forth in section one without first making it appear by positive proof by affidavit in writing, filed with the county clerk, that the wolf, coyote, wildcat, rabbit, or fox was captured or killed within the limits of the county in which application was made. This act shall not apply to counties having a total property valuation of less than $500,000, and shall not be in force until ordered by the board of county commissioners.

The local application of the law, together with its restrictive features, greatly interferes with the intended usefulness of the act. It will not afford protection, except in wealthy counties, where ample bounty is offered. In the sparsely settled counties, where the depredations are greatest, the law does not apply, and in no county unless it is the pleasure of the board of county commissioners; and even if they are disposed to take advantage of the act and order the law in force, they make the bounty so small, usually 50 cents per head, that unless the sheepmen themselves voluntarily increase the bounty it offers no inducement to hunt down the wolves. A movement has been inaugurated by the sheepmen to have the legislature of 1891 enact a law that will be of some service to the industry as well as increasing the taxable wealth of the State.

To give some idea of the losses a few individual cases are cited: Ira Johnson, of Travis County, had a small flock of 300 mature sheep and 40 lambs, and out of this number he lost 30 lambs and 25 sheep from wolves and dogs. The following from the Boerne Post, a local paper in western Texas, vividly describes the situation there:

We learn that a gentleman leaving his ranch on the Guadalupe River, because of the depredations of wild animals, has sold out, finding it impossible to cope with his

losses. Mr. Robinson, having his ranch on the Fredericksburg road, has also sold out for the same reason, and we hear of others who are determined to sell out. Kendall, like Bandera County, will soon not have a sheepman within its bounds.

A. E. Shepard, ex-president of the State Wool-Growers' Association, says:

I turned 1,500 lambing sheep into one of my pastures, and at one time counted over 500 lambs there. A short time after this I went through the flock and I had only 38 lambs left. The wolves had taken all the others; and now, from those 1,500 lambing ewes I have not more than 25 lambs left, and the wolves will soon do away with them. Besides the lambs, they pick off grown sheep every day and night.

Eight flockmasters in Uvalde County, when asked as to their losses this season, counted up nearly 1,700 sheep. Mr. E. M. Kirkwood, of Kimble County, lost 300 out of a flock of 2,000 head, last year. These random examples represent the universal condition of the sheep industry in every part of the State.

Almost every attempt at State legislation in behalf of the sheep industry has failed, for the simple reason that united action on the part of all States interested can not be had. If Texas should be successful in destroying wild animals, and the neighboring States do not, the evil would soon spread again, and the destruction would continue. If all could work together there is very little room for doubt that the coyote and other destructive animals would soon be extinct. If a reasonable bounty were offered, either by the States severally or the nation, for the scalps of these destructive wild animals, they would be disposed of in less time than was required to get rid of the buffalo.

The extinction of these destructive wild animals would reduce the cost of wool production fully one-half. It would beget confidence in the business and make sheep husbandry the most profitable industry in the West, besides saving the destruction of over $15,000,000 worth of taxable property that is now destroyed annually by wild animals.

ANGORA GOATS.

The Angora goat originally came from the high table-lands of Asiatic Turkey. In Texas large numbers of them have been raised within the past thirty years. Mr. W. W. Haupt, a Texas stock-grower, established a goat farm as early as 1860, and he has made it a great success. In a letter recently received from him he says: "There is no stock industry in Texas so remunerative as the Angora;" but like every other vocation it requires experience and special training to make it successful.

Mr. Haupt, in March, 1889, complying with a request of Mr. Henry W. Grady, of Atlanta, prepared a long and interesting article on the Angora goat, which was published in the Southern Farmer. In that article the author describes his method of handling this interesting little animal. Here is an extract:

I am now giving more assiduous attention to my goats than I have ever done, from

the fact that I know the fleece alone is profitable aside from the meat and pelts, and the meat is as much relished as mutton and many prefer it, for the goat is the nicest, tidiest, daintiest eater of the animal family, with his face and dress always clean, for their fleece repels dirt.

Mr. Haupt began by crossing the pure-bred Angora on the common Mexican goat, and it appears from his continued experience that while the animal itself is not thoroughly changed from the Mexican type to that of the pure-bred Turkish animal, yet, after many crosses, the hair becomes as perfect as that of the native Turkish Angora goat. It appears that the change does not take place in the fiber itself, but that a new growth of the genuine Angora hair starts in the very first cross. It grows only to a short length, but in grading up the staple becomes longer; and this process continues the nearer the grade comes to the pure-bred, so that after about the eighth cross the hair has displaced all of the old Mexican growth and is fine, sleek, and glossy, strong and regular as that of the original stock. The hair grows to the length of 10 to 12 inches and has a peculiar luster, which makes it desirable for mixing with wool in the manufacture of fine goods. Mr. Haupt is of opinion that with proper attention the Angoras could be made permanently profitable anywhere in Texas, more especially in the hilly regions of the west and northwest. These goats are healthy and long lived. Their keeping costs but a trifle. While the sheep is subject to many diseases, it seems that the goat is always in good health. As to their manner of living, Mr. Haupt says:

A goat has all the advantage of a sheep on the range. It must be good land to produce sweet grass for a sheep, as he never feeds above the ground, while a goat will take poor land with shrubs and a little grass and make his living 5 feet above the shrub range, for I have seen them stand erect and nip a leaf 6 feet above the ground. And this is a great inducement to a sheepman, that he can run about as many goats as his range will bear of sheep without further injury to the range, if he has much brush; and to the extent his brush may be destroyed is his sheep range improved.

The flesh of the goat is more than equal to that of the sheep. A kid four to six months old is sweet and juicy, and it grows better from that time on. The sheep gives but two sources of revenue, fleece and mutton, while the goat has a skin which in shoes and gloves forms an indispensable portion of the dress of a lady or gentleman. A sheep's pelt is of little value after the wool is removed.

Mr. Haupt shears his flock twice a year, about the 1st of October and the 1st of April. He believes that a goat will produce more fleece annually with two shearings than with one. The value of the goat's hair, which, as the reader probably understands, is called mohair in the books, is more valuable in the market than the best sheep's wool. Two years ago it sold in the New York market at 33 to 35 cents per pound. It is now worth much more. A flock of Angoras, with reasonable care, will average about 4 pounds of fleece, and that, at 40 cents a pound, equals $1.60, which is as good as 8 pounds of wool at 20 cents.

Joseph P. Devine, of San Antonio, writes concerning the Angoras as follows:

> Good grade Angoras, shearing 3 pounds of hair, pay a much better per cent than sheep. They can be herded in flocks of 2,000 to 2,500 with more facility than a sheep flock of 1,000, as they depend practically and exclusively on undergrowth and weeds. The Angora goat is an advantage to a sheep range, for, when lost or strayed from the flock, they will trail the herd and come to camp, while the sheep do the reverse. These goats are subject to no known disease, and are less liable to be killed by dogs or wolves, while at the same time utilizing large sections of land absolutely worthless for any other domestic animal. The Angora provides the only flesh man uses that is not subject to some disease.

It is very much to be hoped that goat husbandry will be studied by the stockmen of Texas and of other parts of the country, so that within a reasonable time our own markets may be supplied with mohair from our own flocks. There are now but 275,000 Angora and common goats in Texas, and that number could be multiplied many times with great advantage.

NEW MEXICO.

The Territory of New Mexico is the oldest sheep region of the United States, and sheep husbandry has been the leading branch of the animal industry ever since it was organized as a Territory, and for many preceding decades while it was a part of the possessions of Old Mexico. Since it became a portion of the territory of the United States the American flockmasters have engaged in the industry, but previous to that time sheep husbandry was carried on exclusively by the Mexican race, and to-day most of the flocks of the Territory are owned by Mexicans. The industry has suffered several periods of depression in the past, yet to-day it is the most flourishing pastoral occupation of the Territory, and has as bright prospects for the future as in any other portion of the country west of the Mississippi River.

New Mexico has been the chief source of supply for a very large portion of the flocks of Western States and Territories, notably Texas, Colorado, Kansas, Utah, Wyoming, and Nebraska. Thousands of flocks throughout the entire West have their origin in New Mexico sheep. Those flocks have been greatly improved, so that but little trace of the original Mexican blood is now apparent. The drain of sheep from New Mexico has been constant for many years, and was especially heavy from 1870 to 1880, causing a marked decrease in the number there. Since that time the flocks have gradually increased as the outside demand ceased; however, since 1887, owing to good prices for mutton, there has been a renewed demand for sheep, but unlike the former it has been mainly for wethers instead of ewes, and has not at any time equaled the increase of the flocks. Recent demands, therefore, have not reduced the number of the sheep in the Territory, although they have curtailed the annual increase. In view of the facts mentioned, New Mexico bears an important and significant relation to Western sheep husbandry un-

like that of any other State or Territory. It may be stated that New Mexico is the mother of the sheep industry of the Rocky Mountain region and the great plains. The prices realized by the New Mexican flockmasters have always been small, but this fact has enabled men of moderate means to get a start that would probably never have occurred had it not been for the cheapness of the sheep. The ewes purchased were small and inferior animals, but were capable of marked and rapid improvement, so that the purchaser was enabled to realize a good profit on his investment by the use of pure-bred bucks.

The surface of New Mexico is marked with mesas, valleys and mountains, foothills, bluffs, canyons, and mountain parks. The mountain ranges, from north to south, generally break into spurs, buttes, and foothills, diminishing in altitude and spreading into mesas or high table-lands.

In the northern part of the Territory the Culebra range looms up to the east into the Raton spur, and to the south is known, according to proximity to local towns, as Taos, Mora, and Santa Fé Mountains. To the west is the Conejos and Tierra Amarilla ranges. Southeast of the old city of Santa Fe and east of the Rio Grande a broken range runs south, variously known as the Placer Mountains, the Sandia, Manzana, Oscura, Jumanes, Fra Cristobal, Caballo, San Andres, and Organs, the latter crossing the southern border of the Territory near El Paso. To the east of the above range is a series of high table-lands, reaching to the mesa known as the Llano Estacado, or Staked Plains, and broken by the low mountains and peaks named on the maps as the Gallinas, Jicarillas, Carrizo, Capitan, Sierra Blanca, Guadalupe, Jarilla, Hueco, and Sacramento.

On the western side of the Rio Grande, from the isolated peak near the northern boundary known as the San Antonio Mountain, another broken range extends south, known locally as Pateca, Valles, Jemez, San Mateo, Ladrones, Oso Magdalena, Socorros, Gallinas, Southern San Mateo, Pinos Altos, Burro, Black, and Mimbres ranges, and the Florida Mountains near the southern border.

Farther to the west, and near the Arizona line, appears the continental divide, composed of mountains and peaks variously known as Tunicha, Chusca, Zuni, Datil, San Francisco, Escudilla, Tulerosa, Luera, Mogollon, Pyramid Steins, Animas, and Peloncillo. These mountains, equally distributed as they are, furnish a large water supply, a great amount of timber, and are excellent for stock during storms.

The mesas and table-lands in the northern part of the Territory are generally about 6,000 to 6,500 feet above the sea level. In the central portion of the Territory the mesas attain an elevation of about 5,000 feet, and in the south about 4,000 feet. The fall of the Rio Grande, from the northern border of the Territory to the point where it cuts the New Mexico, Texas, and Chihuahua boundary, is about 3,500 feet. The ranges generally rise from 2,000 to 5,000 feet above the mesas and high table-lands.

The Rio Grande is the largest river of the Territory. It rises in southwest Colorado, at an elevation of 11,900 feet, flows centrally and southerly through the Territory, mainly through a broad valley, and furnishes abundant water to irrigate all the land available throughout its entire length in the Territory. The annual rise of this stream takes place in May or June, when the deep snows in the high mountains about its head are melted and sent down by numerous tributaries into the main river.

The northeastern portion of the Territory is drained by the Canadian River emptying into the Arkansas in the Indian Territory. The principal tributaries in New Mexico are the Vermejo, the Cimarron, and Mora Rivers, all with fertile valleys and affording large supplies of water.

Next after the Rio Grande, the Pecos is the most important river in the Territory. It rises in the high mountains west of Las Vegas, where it is fed by the everlasting snows, and flows southerly through the eastern part of the Territory a distance of about 300 miles. The principal tributaries are the Vaca, Gallinas, Salado, Tecolote, Hondo, Panasco, Seven Rivers, Black, and Delaware. The upper portion of the river has many fine valleys of considerable extent in the mountains and foothills, and further south the water can be taken out for irrigation and distributed over a vast extent of country.

The northwestern portion of the Territory is drained by the Rio San Juan, with the following tributaries: Pinos, Navajo, Animas, La Plata, and Manco. The Puerco of the West, the Zuni, and Tulerosa Rivers are in the central west.

The Rio Mimbres, Rio Gila, and San Francisco are in the extreme southwest of the Territory.

Numerous small streams, arroyas, and springs are to be found all over the Territory.

New Mexico has an average breadth of 335 miles; length of eastern boundary, 345 miles; length of western boundary, 390 miles; the whole covering an area of 122,444 square miles. By geographical divisions, it is bounded on the north by the State of Colorado, on the east by the public domain and the State of Texas, on the south by the State of Texas and the Mexican States of Chihuahua and Sonora, and on the west by the Territory of Arizona.

If we calculate the area which is covered by mountains (where timber, however, is valuable and the sides are, as a rule, covered with the most nutritious grasses) at about 14,125,203 acres, and arid or barren lands at 3,610,793, there is left a total of 38,640,446 acres of irrigable, agricultural and grazing lands.

The present principal agricultural districts are: The Rio Grande Valley from the thirty-seventh parallel of north latitude to the southern boundary of the Territory; the Pecos Valley; the Canadian River section situated in the northeastern corner of the Territory and drained

by the Canadian and its tributaries; the sections watered by the Colorado and Gila Rivers, embracing a strip on the western line of the Territory varying from 50 to 100 miles in length.

Although much of the central portion of the Territory is occupied by broken mountain ranges and elevated mesas, a very large part can either be irrigated or used for grazing cattle and sheep.

The mesas and table-lands in the northwestern part of the Territory are generally about 6,000 feet above sea level. In the central portion of the Territory such mesas attain an elevation of about 5,000 feet, and in the south about 4,000 feet. The ranges generally rise from 2,000 to 5,000 feet above mesas and plains.

For some of the foregoing facts regarding the physical surface of the country the writer is indebted to the 1889 report of Internal Commerce of the United States.

Governor Prince, of New Mexico, in his report for 1889, states that sheep-owners met with considerable losses both in the winters of 1887–'88 and 1888–'89, the number being reduced by that cause and by sales to parties outside of New Mexico from 1,749,150 in 1887 to 1,339,790 in 1888. The high price of wool during the present season has done much to make up for such losses, and has given a new impetus to the business. Wool which brought from 12 to 14 cents in 1888 sold for 18 to 20 cents in 1889, a difference that has brought a large amount of ready money into the hands of the sheep-raisers. The grade of sheep and quality of wool are constantly improving, with satisfactory results. And in his report for 1890 he says that no industry in New Mexico is more prosperous than that of sheep-raising. Not only has the favorable legislation of Congress enhanced the price of wool to an extent which yields gratifying profits to the owner, but the demand for sheep for mutton has also greatly increased, causing a corresponding advance in prices.

PAST HISTORY OF THE INDUSTRY.

The pastoral occupation of sheep-raising has been a leading live-stock pursuit in New Mexico with its people since the early settlement of this country and long before it became a Territory of the United States. There is, therefore, much of historic interest attached to the industry in New Mexico.

The age of any particular live-stock industry in a country does not necessarily indicate perfection of methods or a superior class of stock. The live stock of any country either improve or retrograde, and the history of the sheep industry of New Mexico is a striking illustration of the fact. New Mexico has fortunately outlived the period of retrogression and is now endeavoring to attain greater improvement and a higher state of excellence, with every prospect of success. Time, patience, and perseverance will accomplish this necessary and important achievement for the sheep industry of this Territory. There were many

extenuating circumstances for imperfections of the past as well as the present condition of the industry.

It is unfortunate that there are no accurate statistics regarding the early sheep industry of this Territory. We can only judge from the well-known energy and scientific acumen of the old Spaniards that the first sheep were brought to the present Territory of New Mexico toward the end of the seventeenth century or the beginning of the eighteenth. It is known that Santa Fé was permanently founded by the Spaniards in 1605. And from a general knowledge and observation of the flocks during recent years it is evident that the first sheep which the pioneer settlers brought with them to this country from northern Mexico must have been of good quality, since continued inbreeding for over a century only reduced the wool of Mexican sheep to a quality appropriate for carpet and blanket stock. It is only since 1855 that the better grades of sheep have been gradually introduced to this Territory, until now, when every sheep-owner, however small, usually endeavors to obtain the best rams his means will permit.

Regarding the past history of the industry, Hon. F. A. Manzanares, president of the bureau of immigration, and a sheep-owner, says:

For over two hundred years the people of New Mexico have been more or less engaged in the sheep business. It has ever been found profitable, and in former years it was only owing to the constant wars with the savages of the Territory that much difficulty was experienced in caring for the sheep, not unfrequently attended with loss of life, more especially at the murderous hands of the Navajos, whose rapacity had no limits, and whose favorite prey was the indefensive lamb. These Indians were, as they are now, very industrious and great workers of wool, hence their cupidity for the fleecy prey. The famous Navajo blankets are made by them, as were also made by the Mexican people some elegant and durable blankets and wool cloth, which created but a limited consumption of wool in the Territory. It was not until our disastrous civil war advanced the price of wool to a fictitious height that New Mexican wools found their way to the Eastern markets, and their high prices continuing after the war, became a great stimulus. The depredating Indians having been permanently suppressed, the wool industry in the country has been successfully carried on until the cattle began to supplant the sheep, a circumstance which has resulted in more detriment to the masses, and especially the poor, than most of us are willing to admit. Nevertheless, the fact stands of record and the vast importance of the sheep business and its encouragement will be plainly shown by the following statistical totals, in connection with the fact that when the sheep were more numerous and generally distributed there was less want among the people than there is to-day, when fewer sheep are owned in the Territory.

From 1860 to 1870 there was a steady increase in the number of sheep, at which latter year it is safe to estimate the number at 3,000,000 head, and it was about that time that a general and urgent demand sprung up from outside the Territory and continued for the ten years following, the result of which was decreasing instead of increasing the number (as a natural consequence would indicate) of sheep, owners as a rule selling freely to Colorado and Texas, so that in 1880 there were, according to the census of that year, only 2,088,831 sheep. From that time, the heavy demand having ceased, again an increase of nearly 100 per cent took place from 1880 to 1887, when a fair estimate would place the number at about 4,000,000,000 head.

Further information on this subject and about the early drives of

sheep has been compiled for the report of Internal Commerce by Hon. T. B. Mills, of Las Vegas, the United States Treasury expert, as follows:

Sheep were brought into the Territory from the southern Mexican States in the early settlement, and after the Indian rebellion in 1860 and the resettlement of the country, sheep raising became the leading industry. The breed, which was likely originally Merino from Spain, degenerated by inattention to a very inferior class as respects wool, making a good mutton, however. Previous to the annexation to the United States large herds were annually driven to the southern market from this Territory, principally for mutton meat. The wool was of bdt little value and was almost solely used in the Territory for the manufacture by the people of blankets, coarse cloth, and bed mattresses. Knives were used in shearing, and the first sheep-shears were brought into the Territory and used in 1854, by John L. Taylor, a native of Urbana county, Ohio. The first blooded Merino sheep were brought in, driven across the plains in 1859, by George Giddings, from Kentucky.

Sheep-raising has been a prominent industry since the annexation, and the drives to the surrounding States and Territories have been large and numerous.

In the Tenth Census, under the head of meat production, it is stated:

Drives into California began about the year 1852 for mutton and for stock. Colonel Chaves, of New Mexico, was one of the chief movers in the beginning; also the Luna family. Through the courteous interest of these gentlemen in the matter referred to the following close estimates have been prepared:

Sheep driven from New Mexico into California in 1852, 40,000 (some sold as high as $16 per head); sheep driven from New Mexico into California in 1853, 135,000 (sold from $9 to $12 per head); Colonel Chaves himself drove in 1854 (the total drives that year) 27,000; total sheep drive in 1855, 19,000; total sheep drive in 1856, 200,000; total sheep drive in 1857, 130,000. Sheep brought about $3.37 per head in these last years. In 1858 and 1859, Indians troublesome, small number driven; in 1860, business ceased; total number of sheep driven from New Mexico into California from 1852 to 1860, inclusive, 551,000.

From Col. Stoneroad and Col. Chaves, both of New Mexico, we have the following records of sheep driven from California to New Mexico in more recent years:

In 1876 Col. Stoneroad took 10,000 sheep from Merced County, California, to Puerto de Luna, New Mexico. His route was up San Joaquin Valley to Bakersfield and along the railroad to Tehichipa Pass, in the Sierra Nevada; thence to Cottonwood, on the Mojave River, where the desert begins; thence downstream to a point much below sea level. Here comes the real desert trail from the "Sinks" to Union Pass through the Blue Ridge Mountains of Arizona, about 150 miles, with very little water. The whole distance, about 1,600 miles, consumed seven and a half months. Others (Pinkerton, Carpenter, and Cosner Brothers, who were robbed and murdered) drove 16,500.

In 1877, by same route, Stoneroad, Hugo Zuber, Capt. Clancy, McKeller, Robinson, and Curtis took 12,500; other flocks, say, 5,000; 1878, Booth and Clancy took 4,000.

All the above were grade Merinos, such being very scarce in New Mexico. They cost $2 per head in California, and were worth in New Mexico $3.50.

It is estimated by men conversant with the subject that from 1876 to 1878 there were annually driven out of New Mexico to Wyoming, Kansas, and Nebraska 350,000 head of sheep. This annual drive rather increased in number than otherwise until 1883 to 1885, when the number reached nearly 1,000,000 head per annum, driven principally to Texas. At that time cattle were considered the best investment, and sheep-raisers disposed of their herds in order to go into the cattle business. The average price realized for the sheep, which were all Mexican, was $1.50 per head.

GENERAL FACTS ABOUT THE INDUSTRY.

To secure reliable data concerning the details of the sheep industry has been a task of more than ordinary difficulty, for the reason that so many of the flockmasters actually engaged in this pastoral occupation care very little about literature of this or any other kind unless it is in the Spanish language, and even then it is doubtful whether they would take sufficient interest to coöperate with any representative of the Bureau unless he was conversant with the Spanish language. Owing to the general indifference, unwillingness, and too often the inability of the Mexican flockmaster, the writer had to rely mainly on the American sheep-owners, together with a few of the public-spirited and educated Mexicans, for the information presented in this report.

It is a recognized fact worthy of note that the success achieved in the way of improvement of the native sheep by the American grower has had a stimulating influence on the Mexican sheep-owner. He has been incited to emulate the example of his more skillful and enterprising American neighbor, who has realized higher prices for his wool as well as for his wethers. This success has induced many native sheep-owners to use better bucks as well as to improve their methods of sheep husbandry. The native Mexican makes progress slowly, but there is no doubt that in the future he may become a fairly prosperous sheep-owner, although he may be a decade or so behind the more progressive American flockmaster. The Mexican flockmaster possesses some peculiar advantages over the American. He is by nature better adapted to the isolated pastoral pursuit than the American, because of the traditions and customs of his ancestry, hence the life of tending the flocks is a natural occupation which he is contented to follow. Again, he will handle the flocks with very much less expense than the American. The Mexican is naturally conservative and deliberate. He should not be called lazy or indifferent, for it is an accepted fact or maxim in the West that a lazy or indifferent flockmaster is a failure in connection with the sheep industry, and it can not be truthfully said that the Mexicans as a class are failures. In respect to cheapness of handling sheep and adaptation by nature as well as choice to the business, the Mexican has the advantage and will unquestionably remain an important and necessary adjunct to the sheep industry of New Mexico, either as

an owner, "major domo," or herder. It is evident from the natural condition of affairs in New Mexico that the sheep business will always be conducted principally by the Mexican grower, though not so exclusively as in the past, and he will be benefited by the object lessons given him by the experienced American flockmaster.

The thriving condition of the sheep husbandry in New Mexico at the present time may be attributed largely to the American flockmasters' achievements. They handle mostly the California Merino, or what is called improved sheep, *i. e.*, sheep bred up by crossing fine Merino rams on Mexican or native ewes. Another cause for the present flourishing condition of the industry in New Mexico is the very large demand for sheep to drive to Kansas and Nebraska and other parts of the corn belt for feeders. This comparatively new feature of the industry, together with the improved wool product, has made the sheep business of recent years the most profitable live-stock pursuit in the Territory. It has also had a beneficial effect on the flocks, which will result in still more rapid improvement as well as a larger per cent of increase and less loss from exposure. Owing to the large demand for feeders the flockmaster is able to dispose of his old sheep, both wethers and ewes, as well as such lambs as are unfit to withstand the treatment of existing methods of handling sheep by the average flockmaster in New Mexico.

It is a notable fact that New Mexico, taking into consideration the whole Territory, is better adapted in every way for sheep than for any other class of stock. Outside of Texas there is no State or Territory west of the Mississippi River where the business can be conducted so cheaply as in New Mexico, and where the total cost per head a year will be as low as in this Territory. Yet there is perhaps no other State that raises such a small per cent of lambs as are raised here in proportion to the number of breeding ewes. This fact, however, is no fault of the country or climate, but it is owing wholly to the character of sheep handled and the methods in vogue.

The number in a flock, or, as commonly designated, a "partida," is usually from 2,000 to 3,000 head of ewes, in charge of a "major domo" and a herder. These two men as a rule take charge of the flock for six months at least, and graze them on the public land. They are furnished with provisions and a tent, which are carried on two pack burros as they move along with the sheep from place to place as in the judgment of the men in charge is most advisable, taking into consideration the character of range, fresh grass, convenience to water, etc.

The number of sheep owned by one person or firm in New Mexico varies from 500 to 50,000. The counties having the largest individual holdings are Valencia, Bernalillo, San Miguel, Lincoln, and Rio Arriba, while the holdings in Eddy, Taos, and Colfax counties are reported smaller. It is needless, perhaps, to state that in those counties where

are found the largest holdings the sheep show less improvement, and consequently are not so profitable to handle. These large holdings have a greater per cent of annual losses from the usual causes, as well as a smaller per cent of increase. These large herds are mainly the property of Mexican owners. The families of wealthy Mexicans, known as the Pereas and Oteros, are said to be the largest sheep-owners in New Mexico, and are accredited as owning together about 500,000 sheep in Bernalillo and adjoining counties. The American owner generally prefers, if he has had previous experience, to handle a smaller number and have a better quality of sheep.

From the foregoing some might infer that sheep-raising in New Mexico was hazardous and unprofitable, but it must be remembered that the present condition of the flocks is due to the old-established custom among Mexican people of giving or putting out their sheep on shares, in the care of industrious men, who willingly pay a yearly rental of 20 to 25 per cent or more to the owner, as they in person or members of their family attend to the sheep. The profit thus derived compensates the renter for his time and labor, and after a few years he becomes an owner and in turn leases his surplus flocks. This system has been in vogue so long that neither owner nor renter feels disposed to entail the additional and temporary expense necessary to improve the flocks by using pure-bred bucks. At present, however, there is a more marked tendency to improve the sheep than usual.

The pasture lands of New Mexico consist mainly of the vast treeless plains, which have very little shade, but are fairly well covered with gramma grass. Here the sheep are grazed during the summer, and depend for drink on the rivers or surface water from rain. In the winter the sheep are taken to the foothills or mountains, where natural shelter and bunch grass or salty sage is more abundant, and for water the sheep eat snow. The manner of pasturing sheep has undergone no changes. From the character of the country flocks have to move about to keep on fresh grass, which, owing to its peculiar short growth, is particularly adapted to sheep or goats. Other classes of stock are gradually giving way to sheep, owing to the peculiar ranges with scanty moisture. For three years the grazing lands received hardly sufficient moisture to renew the annual growth of grass until the winter and spring of 1890–'91, when there was an excess of rain, and to-day the ranges are in splendid condition.

The annual loss of sheep from the depredations of wild animals and exposure has been considerable in the past, but is likely to be proportionately less hereafter, on account of reducing the number and improving the stock, as well as the methods of management. Owing to the constant attendance of a herder, the loss in general from wild animals is not as large as the average losses from exposure. From wild animals the average loss is reported all the way from 3 to 7 per cent,

while from exposure incident to the methods of handling the loss ranges from 4 to 10 per cent. From all sources, including occasional bad winters, the average loss does not exceed for the whole Territory 10 per cent annually.

Very few sheep are brought into New Mexico from eastern States except breeding rams, and they must have extra care and feed in order to render much service, at least until they become acclimated. They can not subsist on the public range like the native sheep, but their offspring do well. The wool loses oil, owing to the dry climate.

The rams mostly in use are pure-bred Merinos and their grades, especially among the American owners and the enterprising of the Mexicans, while a very large number of flockmasters are content to use the improved Mexican rams. The rams in use are 2 years old and upward; and in the northern part of the Territory the rams are turned in with the ewe flock at least thirty days. Each ram is given from 40 to 50 ewes, and in some cases with pure-bred rams 100 ewes are given. The number of lambs raised depends somewhat on the season, and varies from 65 to 85 per cent, or a general average of about 75 per cent.

Very little land is owned by the sheep-owners outside of watered lands, as they depend almost wholly upon the public land for grazing. But the day is not far distant when it will become necessary to own a home ranch, where a sure habitation may be had, and where the breeding rams and weaker sheep may have better attention, and where some shelter and feed may be provided when necessary. As a rule no feed or shelter has been provided except in individual cases where the flocks are small and improved.

Shearing takes place during May or June, except on the Lower Rio Grande or in southern New Mexico, where they shear twice a year, during May and October. But the system of shearing twice a year is declining and will largely become obsolete in time, especially when scab has become eradicated. The cost of shearing is about 1 cent per pound and is done principally by Mexicans, who receive their board and from 3 to 5 cents per head. The bulk of New Mexico wool is sold in the grease to the local buyer, and the larger proportion of the clip of the Territory is handled at Las Vegas and Albuquerque. The fleece of the common Mexican sheep averages about 2 pounds, the improved Mexican 4 pounds, and the Merino and fine medium from 6 to 9 pounds.

Of the wool produced in the Territory last year, about 75 per cent was one-fourth and three-eighths improved Mexican in about equal quantities. Fifteen per cent was fine and the remaining 10 per cent consisted of coarse or blanket cloth and carpet wool. In this estimate the Navajo Indian wool is not considered, as the larger proportion of it is carpet and blanket and the remainder medium. Of the coarse wool one-third is black. The wools of the Territory for 1890 netted

the grower from 12 to 16 cents. The cost of marketing the clip in the East is placed at 4 cents per pound. The bulk of the clip of the Territory is bought by local buyers as soon as sheared, and by them sent to St. Louis, Chicago, Philadelphia, or Boston. There is probably no other State or Territory, excepting, perhaps, Arizona, where so little wool is consigned to distant markets by the grower as in New Mexico.

It is stated by the wool-buyers who handle most of the Territorial wool that the general improvement of the wool product dates back only about three years, and it is astonishing how marked the improvement has been in so short a time. Carpet wool is rapidly disappearing, as a result of better breeding and the mutton demand. Sheep-owners readily discovered that it was more profitable to dispose of the sheep for mutton than to keep them to produce carpet wool.

The demand for wethers and stock sheep is active, and the buyers take them here on the ranch at the nearest shipping point, or drive them to Kansas, Nebraska, and other States north and east. Fully 25 per cent of the flocks is now readily disposed of in this way each year, either to feeders in the corn-growing States or to the sheepmen from the North and East.

The following extracts from the correspondence received from representative sheepmen in the various sections of New Mexico will serve to give a correct idea of this phase of the industry:

In Socorro County last year, during August and September, the feeders purchased the wethers 3 years and over on the trail, paying the sheep-owners from $1.80 to $2.50 per head, and the average weight was about 90 pounds. Another correspondent from Rio Arriba County says that mature sheep sold for mutton average 115 pounds and bring $1.50 to $1.75 per head. A Colfax County sheep-owner says that about one-eighth of the flock is disposed of annually to Kansas and Nebraska feeders at from $2 to $2.50, and the average weight is 85 pounds.

A report from Taos County says that every fall one-fourth of the flock is disposed of as mutton or stockers at about $1.50 per head, and that the 2-year-olds and over, sold to butchers in Denver, Pueblo, and Leadville, dress 40 pounds. A Chaves County owner states that about one-third of the increase of the flocks is sold each year at home for $2 per head after shearing, and the average weight is 90 pounds. A prominent Mexican sheepman from San Miguel says that the male portion of the flock is sold each year wherever the market is best, but usually sold at or near Las Vegas to Eastern buyers, and the average price for 1890 was $2 per head and the average weight 95 pounds. An Eddy County sheep-raiser states that 25 per cent of the flock is disposed of annually to the buyers at home for $2 to $2.25, and the mutton sheep average from 75 to 90 pounds.

It is a matter of some surprise to note how cheaply sheep are handled in New Mexico. Wages paid herders and the men in charge of flocks run from $15 to $25 per month with board. The average cost per sheep a year, all expenses, is variously estimated from 25 to 60 cents. An American owner of perhaps the best improved flock in New Mexico places the cost at 60 cents per sheep a year. The correspondence of the writer with sheepmen regarding the annual cost in several counties is summarized as follows:

San Miguel County, 30 cents by Mexicans and 60 cents by Americans; Eddy County, 30 to 40 cents; Colfax, 50 to 60 cents; Chaves, 35 cents; Taos, 45 cents; Rio Arriba, 30 cents; Socorro, 30 cents; Valencia, 25 cents; Bernalillo County, 30 cents. Mr. F. A. Manzanares, of Las Vegas, an extensive wool merchant and sheep-owner, in

an article on "Sheep and Wool in New Mexico," gives a liberal estimate of the actual expenses for a flock of 2,500 sheep as follows:

Pay of two men and their provisions, etc	$720
Pay of extra help and provisions during lambing season	150
Ten per cent losses, including meat for hands	650
	1,520

According to this estimate, which included the annual losses from all sources, the cost would be 60 cents per head, or omitting that item, about 35 cents.

In briefly enumerating some of the local advantages of New Mexico for sheep husbandry, the most apparent and far-reaching are the general adaptability of the climate and grazing land for sheep; free range on Government land; abundant low-priced labor; extensive areas of fair to good grazing lands which can not be utilized for any other purpose, owing to their altitude and irreclaimably arid nature; the prevalence of the native gramma grass, which covers most of the plains, stands dry weather as no other grass does, and although of short growth, is extremely nutritious and sweet. Remarkable as it is, this grass possesses this quality throughout the entire year, enabling stock to subsist on it the year through. The supply of water, whether from running streams, wells, or even from reservoirs, is pure. The natural heathfulness of live stock in this Territory is a decided advantage. Disease is unknown, with the exception of scab, and this, with improved methods of sheep management and the enforcement of the new scab laws, can be eradicated.

The climatic conditions are specially favorable for the animal industry, and sudden changes of temperature are unknown. The weather may truly be said to be both stable and equable. There are no extremes of either heat or cold, making the climate a sort of happy medium, a fortunate condition, in view of the existing methods of conducting the industry without shelter and no particular habitation. The days are usually quite warm, but the nights are delightfully cool and invigorating.

The chief disadvantages and obstacles encountered by the flockmasters of New Mexico are enumerated by them as few in number but far-reaching in their effect, and of serious consequence to those engaged in the industry. Scab is commonly mentioned as the chief drawback by most sheepmen. Though it is easily cured, yet, owing to the go-as-you-please system with flocks, there is no reasonable prospect of immunity from it, or has not been until the last legislature, early in 1891, enacted a stringent law which is published in this report. Under its provisions sheep-owners have better protection, and its rigid enforcement will thoroughly eradicate scab from the flocks of the Territory. Another source of inconvenience which interferes with the development and improvement of the range for the accommodation of the sheep is the land laws, which prevent flockmasters from acquiring range which they should control to place the business on a better and

more permanent basis. A disadvantage in some counties is the late date at which grass starts in the spring. So many lambs come before the new grass is well started that the ewes do not nourish them well, because of short supply of milk. And in the northern portions of the Territory occasional snowstorms occur during the lambing season. Still worse difficulties are the long dry seasons and scarcity of natural water supply accessible on so much of the grazing lands; for, owing to the unfavorable land laws of the Territory, the sheep-owners do not feel like incurring the expense of making reservoirs or putting down wells. The chief drawbacks to the industry are the poor quality of the sheep and the primitive methods of conducting the industry. Especially is the slow progress of improvement due largely to the old custom of having sheep kept on shares, as neither the owner nor renter will incur the expense of improving the flocks. The owner frequently runs the flocks as a side issue to some other business, and while he realizes 20 per cent as a yearly income on the sheep investment he is content with the old system.

The present outlook for the industry of New Mexico is unusually bright. Buyers are numerous, looking for stock sheep as well as muttons for feeders. The supply of fresh grass and water is now abundant and the protracted dry period of 1888–'89 and 1890 is at an end. The recurrence of another such extended dry spell is not soon anticipated, and should it occur again sheep-owners feel that much of the irrigable land which is rapidly being developed will produce such heavy crops of alfalfa that the feed problem will be solved. The extensive areas of alfalfa and their increase every year will be of great benefit to wool-growers, enabling them to select the old and inferior ewes and feed them for the market, thus withdrawing from their flock all undesirable ewes and only breeding the best.

It has been demonstrated by the experience of practical flockmasters that the best methods for profitably conducting sheep husbandry in the Territory is for the owner to have personal supervision of his flocks, or if the management of the flocks must be left to hired help, to be sure that they are capable, honest, and faithful. It will not do to intrust the flocks with herders who are employed because they can be hired cheaply. The sheep should be kept free from scab, run in medium-sized flocks, and pastured on good fresh grass, and in nowise should the regular supply of salt or water be stinted. Flockmasters have been very neglectful in the matter of a regular and adequate supply of water and salt for the sheep. This must be avoided or profits sacrificed in proportion to the amount of neglect.

When it is at all practicable, every sheep-owner should have a permanent ranch, where feed and shelter are provided, when such requirements are necessary. He should manage to have green feed for sheep during the lambing season. When the range is short of water and it is necessary to pasture such lands, as is frequently the case, the sheep-

owner should provide water by means of tanks, reservoirs, or artesian wells, whichever is the most feasible. Reservoirs are easily constructed at the head of a ravine or in some other natural location, by which a large area of water is stored up for use instead of going to waste. These reservoirs conserve the water from the melted snow and rain, and enable the farmer and stock-raiser to utilize it for their needs during the hot dry season. The writer knows of an extensive sheep-owner that has twenty of these simply constructed reservoirs on his grazing lands, and their first cost is insignificant compared to their permanent value.

In many portions of the Territory artesian wells may be sunk advantageously and furnish flowing water in abundance. The great difficulty in securing these necessary and valuable improvements and conveniences is the cost in time and money, together with the land laws, which discourage improvements of this kind and interfere with ownership or control of the land. In addition to these difficulties, the disposition of the flockmaster in the past has been averse to putting any money into the business except for stock alone. It is gratifying to note that representative sheepmen are aware of the importance of these improved methods of management.

It is a difficult matter to lay down or establish rules for the general guidance of sheep husbandry in the Territory, owing to the prevailing conditions and concomitant circumstances, which have a controlling effect; and the changeable climate and seasons in different portions of New Mexico have to be taken into consideration. As a rule, however, the mountain ranges are utilized from May to October and the prairies and mesas or plains during the winter. In brief, the best methods applicable to any portion of the Territory are, to rid the flock of scab, kill the wild animals, keep fewer and better sheep, use better bucks, dispose of undesirable ewes to the feeders, give the sheep better care, employ reliable and competent help, and provide all the necessary shelter, water, feed, and salt. In general, improve on the past traditional customs as practical judgment dictates, and there need be no apprehension or misgivings as to the permanence, profitableness, or future of the sheep industry of New Mexico.

NUMBER AND VALUE OF SHEEP.

It has been quite difficult to obtain any reliable data from the Territorial records of New Mexico by which the exact number of sheep owned in the different counties of the Territory can be computed. The reports of the assessors are wholly unreliable as to exact numbers, and therefore had no consideration in making up this estimate. But, taking the lowest reliable estimate of the wool clips of 1890 of 9,000,000 pounds, which, at an average of 3 pounds per head, would give us 3,000,000 of sheep shorn during 1890, and to this number adding the number of lambs raised during the year would augment the num-

ber to 4,000,000, which is approximately correct, and as near the exact number as it is possible to determine without an actual count. Taking 4,000,000 of sheep as the number owned in New Mexico, the different classes and their respective values are as follow: 1,000,000 lambs at $1.50 per head, value $1,500,000; 2,000,000 ewes at $2 per head, value $4,000,000; and 1,000,000 wethers at $2.50 per head, value $2,500,000; or a total number of 4,000,000 sheep with a present value of $8,000,000.

The Atchison, Topeka and Santa Fé Railway Company, through its live-stock department, prepared at the close of 1890 a statement of the live stock in the Territory of New Mexico January 1, 1891, showing the different classes of stock in the different counties. It is given here in order to show the relative importance of the sheep industry to other branches of the animal industry. Their statement places the number of wethers for sale and shipment during 1891 at 698.500, or 3,000 carloads. The agents of the company made up their estimate by conferring with the various owners of stock in each of the counties and then summarized the fairly accurate results as follows:

County.	Sheep.	Cattle.	Horses.	Mules.	Goats.	Burros.
Bernalillo	800,000	65,000	6,500	775	25,000	3,500
Colfax	200,000	165,000	7,500	350	27,500	3,750
Donna Ana	160,000	78,000	5,600	320	7,500	4,500
Grant	20,000	221,000	8,000	375	15,800	500
Lincoln	400,000	500,000	17,650	750	35,000	2,500
Mora	200,000	65,000	4,500	275	25,000	3,500
Rio Arriba	125,000	30,000	1,250	275	25,000	3,500
San Juan	125,000	50,000	3,000	275	9,000	4,500
Santa Fé	90,000	5,400	1,000	175	9,000	2,500
San Miguel	500,000	175,000	7,500	600	12,500	4,500
Sierra	10,000	115,000	5,500	270	9,000	1,000
Socorro	97,800	241,000	7,500	570	10,000	1,500
Taos	125,000	3,400	1,500	325	7,500	2,800
Valencia	700,000	95,000	3,750	475	27,000	3,000
Total	3,492,800	1,809,400	80,750	5,810	244,800	41,550

THE ADVANTAGES OF IRRIGATION.

When large acreage is under irrigation and extensive crops of alfalfa are raised it must be of great benefit to wool-growers, and practically put the percentage of loss at a minimum, as it will enable the flock-master to select out the old and undesirable ewes and feed them for the market, and only breed the best.

It is indeed a favorable condition for the animal industry of the Territory that irrigation enterprises are now receiving so much attention. The further development and success of irrigation is of paramount importance to stockmen. It has been demonstrated that under irrigation at least three good crops of alfalfa can be produced in a season and frequently four crops. Alfalfa is unsurpassed as feed for sheep, and produced by irrigation in the arid regions is much superior as a stock food to the same crop produced on the rich fertile soil of the lower altitude and more humid country of the States farther east. The

alfalfa produced in the high arid region of New Mexico is not so coarse and watery, and is more nutritious. The crop can also be kept through the winter with less damage, and usually in better condition than in the agricultural country east.

There is not a single county in the Territory where irrigation farming may not to some considerable extent be followed successfully. This fact is evident from the success already achieved in every county of New Mexico. Some counties will naturally have larger areas than others; but this will be equalized by a general distribution of products raised so that every county can assuredly find a home demand for all the alfalfa or other crops it will produce. At present the land irrigated and producing crops is but a little more than 1 per cent of the entire area of the Territory. This percentage does not include all of the area under ditch. The water supply of New Mexico, taking the Territory as a whole, is comparatively well distributed, nearly all the counties in the Territory having their small rivers, and some of them large ones. Perhaps no other portion of the Rocky Mountain region offers better opportunities for the construction and profitable operation of large irrigating canals or systems of ditches, on account of the abundance of water and of the great extent of arable mesa land, than do some of the counties of New Mexico.

The success and further development of irrigation means not only a profitable undertaking for those engaged in the production of crops by giving them an exclusive home market for all that they will ever be able to produce, but it means a great deal more for the animal industry, which is now and will always continue to be the leading enterprise of the Territory. And it also insures and encourages the growing of better stock by improved methods, and correspondingly larger profits. It will put the animal industry on a permanent basis. Live stock will increase greatly in value if not in numbers. In fact, irrigation is an agricultural advantage that insures a bright outlook for the sheep industry of New Mexico. It is a necessary adjunct to future success, and without which a serious decline would be certain.

NAVAJO INDIAN FLOCKMASTERS.

A report on the sheep industry of New Mexico would be incomplete without at least a brief mention of what the Navajo Indians are doing in sheep husbandry. In truth, these Indians may be said to be the pioneer flockmasters of the Great West, for according to old Spanish records the Navajos were engaged in sheep-raising during the sixteenth century and have continued their pastoral pursuit ever since by primitive methods.

The Navajo Reservation is located in the northwestern portion of New Mexico, one-half of the reservation extending into Arizona. The Indians now number 17,000, and are said to be increasing. They are credited with owning live stock as follows: Sheep, 800,000; horses,

250,000; mules, 600; burros, 1,000; cattle, 5,000, and 250,000 goats. They are now endeavoring to exchange horses for cattle and sheep. The Indian agent, C. E. Vandever, estimated their wool product for 1889 at 2,000,000 pounds, and the value of their manufactured blankets that year amounted to $39,000. Their wool blankets are considered quite an industrial curiosity, and are sold in the east at very high prices. The looms used are quite crude and primitive, and a great deal of time is consumed in the manufacture of the blankets.

The sheep subsist through the year on the grazing lands; during the summer are pastured on the plateaus, and in the winter in the valleys. The climatic conditions are quite favorable, and contagious diseases and epidemics are unknown. Neither shelter nor feed is ever provided for sustaining the flocks during winter.

The wool product is handled mostly at Albuquerque, and in 1890 amounted to about 2,000,000 pounds, mostly carpet wool. Messrs. Eisman Bros. estimate that 35 per cent of the clip is straight carpet, 25 per cent blanket, and the remainder coarse, medium wool. At least one-third of the wool is black. Their sheep are larger in size than the bulk of New Mexican sheep, and dress from 60 to 70 pounds.

The flocks belonging to these Indians vary in size from 300 to 4,000 head, and ewes, wethers, and bucks are run in the same flocks together throughout the year. They have no regular period for lambing, but lambs come at all seasons of the year. Shearing takes place at any time from March to May. These Indians seem to have little desire to improve their flocks, and when good bucks are given them by the Indian agents they are very apt to barter them for other stock. The Navajo Indians are about the only flockmasters that seem to be content to grow carpet wool.

PERSONAL EXPERIENCE AND OBSERVATIONS.

In the following pages are given the experience and observations of practical sheep-owners and others who are identified with the industry and are qualified to speak authoritatively on the subject under consideration. Different sections of the Territory are represented, and various pertinent questions relating to the industry are briefly treated. Coming from men practically engaged in sheep raising in New Mexico, these are valuable points well worthy of consideration:

Troy Bros., Raton, Colfax County:

Our only real scourge, or at least the worst, is the scab, and until we can have protective legislation preventing its spread by nontaxpaying, floating Arab flocks, we will always have trouble. A liberal bounty on animals would reduce our losses, but the scab, scarcity of water, and difficulty to restrain floating herds, does more to retard the improvement and investment in the industry than all else.

The Jaffo-Prager Company, Roswell, Chaves County:

We find sheep-raising in this country a very profitable business. We think we

get a larger per cent of lambs than other sections from the fact that the Pecos Valley produces such an abundance of salt grass, regardless of rainfall, that there is always a certainty of having good lambing. Alfalfa is raised to a considerable extent, on which sheep, and particularly rams, do well.

Thomas Gardner, Seven Rivers, Eddy County:

My own experience in sheep raising is that five years ago last December I started with 2,000 head of sheep, and I have sold $11,000 worth of sheep and have 3,000 head to-day, and my experience is that with proper care sheep raising is more profitable than any other stock; that if the sheep business is not conducted properly, it is the most losing business there is.

Hon. F. A. Manzanares, Las Vegas:

The sheep industry in New Mexico has always been a constant and sure source of gain and prosperity, notwithstanding the difficulties attending the care of sheep, in former years, by the merciless ravages of the Navajo and Apache Indians, and latterly the restricted and overcrowded ranges; but at present matters and ranges to sheepmen are more satisfactory, and the herds are reduced to a proper number, and we sincerely hope that this useful industry will from this time onward receive the good attention and impetus it deserves, in which event it will bring prosperity to a larger number of people than any other live-stock industry in the Territory.

Ferd. Meyer, Costilla, Taos County:

My experience extends only over the San Luis Valley, and it would be very difficult to lay down or establish rules for the general guidance of sheep husbandry. We simply make the most of circumstances controlled by a very changeable climate and seasons. We can never profit this or next year from what we know seems to have been previously. As a rule the mountain range is utilized from May to October, and the prairies during the winter months, when the snow on the ground enables us to reach the midprairie, which, owing to want of water during summer, cannot be pastured over. Large numbers of sheep at fair prices were bought and taken to the border States to feed for market while hay and grain were low. We do not look for buyers for the next twelve months, owing to failure of surplus crops in Kansas in 1890.

R. F. Hardy, Las Vegas:

A steady demand for muttons resulted in bringing buyers from all of the feeding States to New Mexico in search of stock. Seven hundred and fifty thousand head, in round numbers, were sold and driven from the Territory last year. A remarkable feature of the trade has been the selling of ewes for breeding purposes to the farmers of Kansas, Iowa, Wyoming, and Minnesota. It has been discovered that the New Mexico sheep are usually hardy and prolific, and for this reason our flocks are purchased as foundations for breeding by the sheepmen of the older States. Importations of sheep this year were limited to the bringing in of a considerable number of fine bucks from Vermont, Pennsylvania, Ohio, and other States. Numbers can not be given accurately, but it is evident that our sheepmen are more progressive and are grading up their flocks with the best blood that money can buy.

Daniel Troy, Raton:

The history of the industry for this portion of our Territory for the last fifteen years has shown a steady improvement in the care and quality of our sheep, while at the same time the number of sheep-raisers has been gradually decreased by the closing out of small owners, augmented by the increased demand for mutton sheep for the last three years. In proportion to the improvement in the quality of our sheep, so also is our wool improved in quality and average yield per head, so that the

decrease in quantity of wool is much less in proportion than is shown in the number of sheep. Improved sheep demand improved care, with expensive improvements for their protection, and fairly paid, clothed, and fed American labor. A decrease in prices for Territory wools can not sustain these conditions long, even though we have the advantage of free grass and a good climate.

The Stock Grower, Las Vegas:

The Australian system might be tried in New Mexico. There is plenty of rainfall to grow any crop if properly distributed. At times there is not enough moisture in the ground to bring the dews, and the result is drought. The Australian plan is to make artificial lakes or reservoirs in every hollow; from one to a dozen on every farm. These reservoirs act as catch-basins for the surplus rainfall in the spring and fall, and during the hot months in summer the water in these ponds is absorbed and brings rain. The rain-belt farmers can accomplish the desired result if they adopt this plan, and the work to each individual or farmer would be comparatively nothing. It is clear to any mind that lakes of water scattered over the plains in this manner would be beneficial.

NEW LAWS RELATING TO THE SHEEP INDUSTRY.

One of the greatest difficulties that has beset the flockmasters of New Mexico has been the careless management regarding scab. Those flockmasters that used the proper precautions were often handicapped by the slipshod sheepmen, so that it became necessary to move them by legislative enactments. The scab law, if enforced, as no doubt it will be, will drive disease entirely out of the country, as it exists in a very mild form and is easily cured.

Another source of loss common to the plains and mountain regions is the depredations of wild animals. An act was passed last winter by the Territorial legislature to encourage the destruction of wolves and lions.

The following laws will be quite beneficial to the sheepmen—will give a new impetus to the industry, insure rapid improvement of the breeding stock, and encourage better methods of management:

[For the prevention of scab, etc.]

SECTION 1. That henceforth any and all persons, company, or corporation owning or holding stock on shares, such as sheep, goats, etc., that may pasture any sheep or goats within the limits of this Territory, is hereby required to comply with the requirements of the following sections in this act.

SEC. 2. That it shall be the duty of any person, persons, company, or corporation, who shall either own or have any sheep or goats on shares, to dip all of said stock within the first day of June and the last day of November, and use in said process all the ingredients required to effect the cure of scab or any such malady. The bathing process, or dipping, shall be executed in the usual manner heretofore in use by all owners of sheep.

SEC. 3. Any person, persons, company, or corporation, party or parties, having sheep on shares, who shall fail to comply with the requirements and provisions of this act, shall be guilty of a misdemeanor, and upon conviction thereof, shall be punished by a fine of not less than fifty dollars, and not more than three hundred dollars, and the costs of the prosecution of all matters and things required in the said case.

SEC. 4. That, upon the affidavit of two competent persons, the justice of the peace or any other court of competent jurisdiction shall issue a writ or summons against any person or persons, company, or corporation, who has been reported to said court as having infringed against the requirements and provisions of this act, and said person, persons, company, or corporation shall be tried as now provided in such cases.

SEC. 5. Any person, persons, company, or corporation, who are owners or having interest in woolen stock, who shall receive any damage through the neglect of any person, persons, company, or corporation of dipping their sheep, as provided in section 2 of this act, said person, persons, company, or corporation so being damaged by the malady of scab in their flocks, shall have a right of action, and shall be able to recover from the parties owning said stock, not having been dipped as provided in section 2 of this act: *Provided, however*, That the party so offended shall give thirty days' notice to any person, persons, company, or corporation that has not complied with the requirements and provisions of section 2 of this act, to comply with the same as provided; and if, after such notice, parties so notified fail to comply, then in that event the parties so offended shall have a right of action against the parties so failing.

SEC. 6. Any funds collected from fines or penalties as provided in this act shall be paid into the general treasury of the county where such offence is committed.

SEC. 7. That all acts and parts of acts in conflict with this act are hereby repealed, and this act shall be in full force and effect from and after its passage.

Approved, February 26, 1891.

AN ACT to encourage the destruction of wolves and lions.

SECTION 1. Whenever in any county of this Territory a petition signed by not less than one hundred persons, payers of taxes in such county, shall be presented to the board of county commissioners of the county, asking for such an order as is hereinafter described, it shall be the duty of the said board immediately to make an order and spread the same on the record of their proceedings, to the effect that there shall be paid from the county treasury for each mountain lion, and each large gray wolf, or lobo, killed within the county, a sum of money not exceeding seven and one-half dollars, upon proof of the killing as hereinafter provided.

SEC. 2. Any person applying for the payment to him of the money so ordered to be paid, shall file with the county clerk a statement in writing, under oath, describing the animal or animals killed, and setting forth when and where each one was killed, the residence of the applicant, and that the animal or animals were killed within the county. Such statement shall be accompanied with the scalp of each animal, including the ears and the skin of the face down to the tip of the nose. The county clerk shall keep a record of all such statements received by him, in a book kept for the purpose by him in his office, and shall present all such statements and scalps to the board of county commissioners as soon after they are received by him as said board shall be in session.

SEC. 3. At each session of the board of county commissioners all such statements shall be taken up and passed upon the same as other claims against the county; and if said board shall be satisfied of the truth of any such statement, and such statement is accompanied by the number of scalps necessary to substantiate its averments, said board shall order the claim paid like any other county indebtedness. All scalps presented with any statement shall, immediately after the claim is passed upon, be destroyed by or in the presence of the board, and such destruction shall include the cutting of each scalp in at least two pieces, separating the ears.

SEC. 4. Any board of county commissioners making such order as is provided for in the first section of this act is authorized, when in the opinion of the board it may be necessary, to levy a special tax not exceeding one-half of one mill on each dollar of taxable property in the county, for the purpose of raising funds from which to make the payments provided for in this act.

SEC. 5. When any such order as is provided for in section one of this act shall be made, a copy thereof shall be printed in some newspaper published in the county not less than six times in each year in which it remains in force, and at least one copy in each such year shall be posted up in some conspicuous place in each precinct of the county.

SEC. 6. Any false swearing in making oaths to the statements required by this act shall be perjury.

SEC. 7. This act shall be in full force from and after its passage.

Approved, February 17, 1891.

AN ACT relating to the killing of animals.

SECTION 1. Any person killing, or causing to be killed, any bovine cattle or sheep, for his own use or for the use of others, or for the purpose in whole or in part of sale or exchange, is hereby required to keep in his own possession, unchanged and unmutilated and in condition to be easily inspected and examined, all hides and pelts of such animals, including the ears, for the period of thirty days after the killing; and shall at any time while such hides or pelts remain in his possession permit the same to be inspected and examined by any sheriff, deputy sheriff, or constable, or by any board or inspector, or other officer authorized by law to inspect any hides and pelts, or animals, whether dead or alive: *Provided, however,* That the provisions of this act shall not apply to the killing by persons engaged in public round-up of animals for use in connection with the making of such round-up.

SEC. 2. Each violation of the provisions of this act shall be punished, in the discretion of the court in which a conviction is had, by a fine of not less than twenty-five nor more than one hundred dollars, or by imprisonment not exceeding three months, or by both such fine and imprisonment.

SEC. 3. Inability or refusal to show such hide or pelt to any proper authority within said period of thirty days, or a refusal to show it at any time thereafter while remaining in the possession of the person by or for whom the animal was killed shall be conclusive evidence of a violation of the provisions of this act, and shall be competent evidence to go to the jury upon the trial of any indictment against such person or persons for the larceny of any animal or animals, or for the receiving of stolen property. No conviction, however, under such indictment shall be had on such evidence alone, but such evidence must be corroborated by other independent evidence, which, if standing alone, would tend to connect the accused with the commission of the offense charged.

SEC. 4. Upon any prosecution for a violation of the provisions of the first section of this act, the defendant shall be allowed, after verdict, to submit to the court evidence of any facts tending to excuse or explain his inability or refusal to show any hide or pelt, and the court shall consider such evidence in fixing his punishment; and in cases where such evidence, in the opinion of the court, is sufficient to justify it, sentence may be indefinitely suspended.

SEC. 5. All laws and parts of laws in conflict with this act are hereby repealed, and this act shall be in force from and after the first day of April, 1891; but this act shall not be construed as repealing or in any manner changing the provisions of sections 71 to 75, both inclusive, of the Compiled Laws of 1884.

ARIZONA.

The Territory of Arizona, with a population of only 59,600 in 1890, is, so far as the sheep industry is concerned, in as prosperous a condition as any State or Territory in the great Southwest. Sheep husbandry is the leading and most profitable agricultural pursuit of its people, and the indications are that this will continue the leading live-stock business. Stock-raising must indefinitely remain the principal industry, as the country is little adapted to any other general pursuit outside of mining and farming by irrigation. The sheep business is in a very flourishing condition now—in fact the industry has been in a thriving condition since its inception ten or eleven years ago, when the first start of any consequence was made. There have been a few sheep in the Territory for over twenty years. The most reliable statistics on the subject show that the number in the Territory, not including those on the Navajo reservation in 1870, was only 803 head; in 1876, only about 10,000; in 1880, 76,524, and in 1890, 698,404; so it is evident that the sheep began to be brought in about ten years ago, and have constantly increased in numbers as well as in public favor, and to-day they are considered the mainstay of the country. There is probably no other place in this country where the same class of sheep can be handled with so little expense the year round as in Arizona.

It is necessary, before entering into a discussion of the merits, condition, and general facts pertaining to sheep husbandry of the present time, to consider in a brief way the past history and progress, the physical characteristics, and climate of the Territory, showing its adaptability to live-stock husbandry, and why the industry is prospering notwithstanding that it costs more to get the wool and mutton products to market than in any other portion of the United States.

The Territory of Arizona is situated in the southwestern part of the United States, bounded as follows: On the north by the State of Nevada and the Territory of Utah, on the east by New Mexico, on the south by the State of Sonora, Mexico, and on the west by the States of California and Nevada. It extends from the one hundred and ninth meridian west to the Great Colorado River (nearly one hundred and fifteenth meridian), and from 31° 28′ of north latitude to the thirty-seventh parallel, and contains an area of 113,960 square miles, or 72,906,240 acres. It has a mean length of 380 miles north and south and 350 miles east and west. The Territory is an empire in itself, and equals in area the six New England States and New York combined, or those three great States of the Mississippi Valley, Ohio, Indiana, and Illinois. Some idea of the newness of the country and its present limited development is shown by the fact that of all this vast area only 15,116,269 acres have been surveyed.

The middle and northeastern portions of the Territory consist of plateaus which have an elevation of from 3,000 to 8,000 feet above the sea, and are here and there dotted by volcanic cones rising from 2,000

to 3,000 feet above the plateaus. The southern portion is a plain with a slight elevation above the sea, amounting to only 200 feet at the mouth of the Gila River. The mountain ranges, of which there are many, have generally a northwest and southeast course, with the exception of the Mogollon range in the east, which runs nearly east and west, joining the Sierra Blanca. The Sierra Prieta and the Aztec range in central Arizona are flanked by foothills which sink gradually to the level of the table-land on the north, and by the mesas sloping toward the Colorado River in the southwest. The highest mountain is the San Francisco, a volcanic cone whose summit is about 12,000 feet above the sea. The great table-lands of the north are covered nearly their entire extent with nutritious grasses, and in places are diversified by gorges which, in most cases, widen into beautiful and productive valleys. The canyons formed by the passage of the Colorado River through the lofty table-lands of the northwest are unequaled in grandeur, being the celebrated "Grand Canyon of the Colorado." The stream flows between massive walls that rise to a perpendicular height of nearly 7,000 feet above the water. The southern, central and southwestern portions of the Territory are well watered and contain the largest body of agricultural land, comprising the valleys of the Gila, Salt, and Colorado Rivers. The rivers and smaller streams occupy an area of 51,200 acres, and the lakes and ponds 12,800 acres.

First among the rivers of Arizona is the Colorado of the West. It rises in the Wind River chain of the Rocky Mountains, some 12,000 feet above the level of the sea. It flows southeasterly in its upper course, and is known as the Green. In southeastern Utah it is joined by the Grand. These streams united form the Colorado proper, and from the point of the junction to the Gulf of California, being in its course the western boundary of the Territory, it is known by that name. The length of the Colorado is about 1,500 miles, and is navigable 600 miles. The Little Colorado takes its rise in the Sierra Blanca range. A short distance to the northwest it is joined by the Rio Puerco, which likewise has its source in New Mexico. From thence the river flows in a northwesterly direction, joining the Colorado of the West at the Grand Canyon. The Little Colorado is nearly 200 miles in length, and has some large and fertile valleys along its upper course. Next to the Colorado the Gila is the largest river of Arizona. Its source is in the Mogollon Mountains. It crosses the Territory from the line of New Mexico to the Colorado River at Yuma. The valley of the Gila embraces a large portion of the arable lands of Arizona. The Salt River, which joins the Gila below Phœnix, is formed by the Black and White Creeks. These streams have their sources in the Sierra Blanca; length nearly 200 miles. Other rivers worthy of mention are the Santa Cruz, San Pedro, Rio Verde, Agua Fria, and the Hassayampa, each being from 150 to 200 miles in length.

Northern Arizona is the best watered portion of the Territory. The

White Mountains, Bradshaws, Sierra Prietas, Sierra Anches, and San Francisco ranges of mountains all traverse it. The White, Puerco, Colorado, Choquiti, Agua Fria, Verde, and other rivers and streams give an inexhaustible supply of water for irrigation if properly utilized. Skirting the dry valleys where no streams flow are mountains in whose canyons are natural reservoirs that can at small expense be utilized for storing the life-giving fluid. Gramma and bunch grass cover the highest mountain ranges, affording most excellent pasturage for cattle and sheep.

A description of the surface area of the Territory is given under the following classification: Mountainous area, 32,142,282 acres; mesa land, 29,107,353 acres; valley land, 31,076,317 acres; and the estimated forest area is 9,148,007 acres.

The agricultural lands are confined mainly to the valleys and mesas, or that part of them which is subject to irrigation. Where irrigation is possible the soil is unrivaled as to its productive fertility, and yields enormous crops. The principal development of farming under irrigation has been done in the southern and central portion of the Territory, notably in Maricopa County.

The rainfall along the Gila River averages from 4 to 5 inches, while at the base it rises to 25 or 30. Showers are most frequent in July and August. The climate of northern Arizona, where sheep-raising is mainly confined, is almost perfect, so far as the health and comfort of stock are concerned. This portion of the Territory has an elevation ranging from 3,000 to 7,000 feet above sea level. In winter the thermometer ranges at night from 10° below to 30° above zero; the days are bright and sunny and the air pure, dry, and invigorating. Stock is neither fed nor housed in winter, but subsist very well the year round upon the ranges. No section of the United States has a more healthful climate than Arizona, a very important consideration in connection with stock-raising.

In a report made to the United States Treasury Department for internal commerce of 1890, William E. Guild, of Florence, Ariz., has the following to say regarding the live-stock interests:

> Arizona is in fact as well as name "a stock-raiser's paradise," and there is no territory of equal extent on the continent better deserving the name. Labor and expenses are lighter and profits higher, the percentage of loss smaller, and the increase greater than in any other stock-raising section. Water is abundant near the surface in nearly all the plains and valleys. Artesian wells exist in Sulphur Spring Valley, and in but few places where efforts have been made to secure water has a failure been the result. Windmills, steam pumps, and horse-power lifters are numerous, and it is almost incredible the number of cattle that are supplied from these wells. Many wells in Pima, Cochise, and Pinal counties water from 500 to 12,000 head of stock.

The pasturage of Arizona comprises a variety of grasses of the most nutritious character—black and blue gramma, sacaton, gaietta, bunch grass, and alfileria. The mesquite tree, with its prolific crop of beans,

and the catsclaw, with its rich and fragrant blossom, are great sources of sustenance to stock, and possess wonderful fattening properties. It is estimated that more than one-half of the entire Territory is grazing land.

The principal sheep counties of the Territory are Apache, Yavapai, and Coconino. The latter county is a new one, created by act of the last legislature by a division of the county of Yavapai. The county seat is at Flagstaff, on the line of the Atlantic and Pacific Railroad. The affairs of the county are prosperous, and the principal industries consist of the manufacture of lumber, stock-raising, and the quarrying and shipping of sandstone for building purposes. Nearly all of the great lumber forests of the San Francisco range are in Coconino County.

Of these counties, comprising the chief sheep districts of the Territory, a brief description of the stock features is given by Arizona's commissioner of immigration, John A. Black, and is as follows:

Entering Arizona from the east along the line of the Atlantic and Pacific Railroad, the traveler finds himself in Apache County, which covers an area of 20,940 square miles. It is rich in natural resources and capable of sustaining many times its present population of only 5,000. North of 35° 30′, and embracing two-fifths of the area of the county, are located the Moqui and Navajo Indian reservations. These Indians are peaceable, and lead a quiet and comparatively industrious life. Their principal occupation is the raising of large herds of cattle and immense flocks of sheep, from which they receive a very considerable income, enabling them to live better than the average Arizona Indian. The Navajo blankets, made by hand by the squaws of that tribe, are justly celebrated as the finest blankets in the world.

The principal industries of Apache County are sheep and cattle raising and agriculture. The county is peculiarly adapted for the successful raising of sheep, and is at present the largest producer of wool in the Territory. A conservative estimate of the product during the past year is given at about 2,000,000 pounds, and the number of sheep grazing in the mountains and in the valleys is estimated at about 300,000. The sheep industry is in an exceedingly flourishing condition, and the grade of sheep is being yearly improved.

In no one thing does Yavapai County rank higher than in its stock interests and capabilities. All the glades and slopes of the mineral-hiding hills and mountains are covered with nutritious grasses and forage plants. The climatic conditions are such that nowhere need stock be sheltered or winter-fed. While the more valuable water rights are long since absorbed, every year some man of enterprise develops an ample supply of water for his stock and household use; or water is found by wells where it was thought none could be obtained. All grasses and forage plants cure standing, and they are constantly increasing in quantity, quality, and variety.

The sheep industry is also a large one, the product being classed with the best fleeces of the world.

From another official publication the following information is gleaned regarding the principal stock regions of the Territory:

Northern Arizona is all well grassed. Of the native grasses the black and white gramma are perhaps the most nutritious. Its superiority is generally admitted by stockmen, and beef fattened upon it is said to be tender, juicy, and of a most delicious flavor. Scarcely inferior to the gramma is the bunch that covers all the high mountain ranges. The galleta grows in the lower mesas, and aside from giving good pasturage for stock furnishes a most excellent hay. In addition to these the alfilerillo or Mexican pin grass, well known and highly prized by all stockmen in Cali-

fornia, is making its appearance in many of the valleys of this section. Its fattening qualities and rare vitality, however, make it a valuable addition to the native grasses. A peculiarity of the alfilerillo is that however closely it is grazed it springs anew after each rain; apparently it is impossible to tramp it out. When the grasses become dry upon the ranges they have all the nutritious qualities of hay, and stock of all kinds thrive upon them, which, with the browse from the chaparrel, gives good pasturage during winter.

Alfalfa or lucerne is the only grass cultivated. It is grown to a limited extent in the settlements of Apache County, on the Little Colorado, and in some of the valleys of Yavapai County. This grass, unknown to the Eastern farmer, is exclusively cultivated in California and Arizona. It is of thrifty growth, is cut three to five times per annum, and yields two tons per acre at each cutting. As hay it is most excellent for horses and cattle. Each acre, when grazed, will keep two head of horses or cattle the year through.

Sheep-raising is extensively followed in the counties of Yavapai and Apache, which contain more sheep than all the Territory besides. The average increase upon a flock of ewes is 70 per cent per annum. They are shorn twice a year—in spring and fall. Each sheep averages 6 pounds of wool per year, worth 15 cents. The mutton sheep bring from $2.50 to $3 per head. One herder will care for 1,500 head. He is paid $25 per month; so it does not require many figures to compute the profits. There is much rivalry between the cattlemen and sheepmen, from the fact that cattle and horses will not graze upon grass once passed over by sheep; but there is an extensive territory so broken in character as to be undesirable for cattle ranges, and it is probable that sheep-raising will continue a leading industry for many years to come.

Not more than half the grazing lands of northern Arizona are occupied. Many valuable ranges are yet open to occupation, but without developing a water supply, either by wells or storage reservoirs, a large area must remain vacant.

It can be truthfully said that it will be only a few years when this district will support a million of cattle and a proportionate number of horses and sheep.

There was published by authority of the territorial legislature of 1883, "The Resources of Arizona," by Patrick Hamilton, from which I make the following extracts pertaining to the sheep industry during its early beginnings:

Arizona has been well called the stock-growers' paradise, and there is no region in the United States that better deserves the name. There is no country where the labor and expense is so light or where the profits are so high; there is no country where the percentage of loss is so small or where the percentrge of increase is greater, and there is none where a fortune can be more quickly realized.

Arizona has also one other great advantage for the stockman. While in other countries the area of grazing ground is becoming narrowed and its limits circumscribed by the steady advance of the farmer, here the immense plains, table-lands, and foothills will never be utilized for any other purpose than grazing. The agricultural industry will always be confined to the valleys bordering the streams; and the vast area included in the rolling plains and elevated hillsides will always be devoted to cattle. Most of this land is valueless for agriculture, but its wealth of rich grasses makes of it a magnificent stock range. The cattle-owner who thinks of embarking in the business here need have no fear of being "crowded out" by the farmer. The domain of each is clearly marked by nature, and beyond the bounds which she has set the tiller of the soil may not go. A good range once secured, the owner can turn out his lowing herds over the broad savannahs and rolling foothills, and rest assured that the farmer will not in a few years drive him out and force him to seek fresh fields and new pastures.

The short, sweet grass, which grows on the foothills and valleys, and of which the sheep are particularly fond, keeps green nearly the whole year. While the wool-

grower in northern regions sees thousands of his flock destroyed by snows and icy winds, and is compelled to provide food and shelter for his shivering flocks, here in Arizona they roam at will over mountain, hill, and dale from January to December.

In Yavapai, Coconio, and Apache counties the sheep are pastured during the spring, summer, and autumn in the glens and foothills of the San Francisco, Mogollon, and Sierra Blanca ranges, and on their outlying spurs and parallel ridges. The short, sweet pine grass of the mountain country is eagerly sought after by the sheep and they grow fat very rapidly upon it. Late in the fall the flocks are driven to the valleys and mesas of the warmer regions further south. In the spring they are taken to the shearing grounds, and then to their mountain pastures for the remainder of the year. Besides the grass we have alluded to, the alfileria, or wild clover, has been introduced by sheep driven from California, and is rapidly spreading over the country. It is a species of feed sheep are especially fond of and on which they keep in prime condition at all seasons.

Diseases among sheep in Arizona are rarely ever heard of, and the woolgrower is saved the expense and constant annoyance of "doctoring" his flock, as is the case in other countries. The pure air and clear, cold water of the mountain region has a remarkably healthy effect, and in the winter months as well as in the summer they keep in excellent condition.

The grade of sheep in the Territory is being steadily improved by the introduction of many fine Merino, Southdown, and Cotswold rams. The stock first brought to the country were driven from New Mexico, and were a poor lot, reduced to mere runts by inter-breeding. But a better grade has been driven from California, and by careful crossing the Arizona sheep will compare favorably with any in the Rocky Mountain region. They are fine woolgrowers and make delicious mutton. The yield per head averages about eight pounds per year. Sheep are shorn twice a year—in the spring and fall.

The sheep industry of Arizona is only in its infancy. The large profits realized are an inducement not easily withstood, and the remarkable success which has attended those who have engaged in it will naturally attract others. Nearly every man who has gone into the business has already become, or is fast getting rich. The failures in nearly every instance are due to ignorance and mismanagement. With some practical knowledge and a good start, a man with average energy and a fair share of industry will find himself independent in a few years. There are yet fine ranges unoccupied in many portions of the Territory, capable of sustaining thousands of sheep, while very desirable locations can be secured at reasonable figures. In eastern Yavapai and Apache counties the sheep pastures are not excelled by any in the Southwest, while the facilities for shipping the crop are everything that could be desired. In Graham, Gila, and Pinal are also many choice ranges where fortunes can be accumulated within a few years.

SHEEP HUSBANDRY IN THE TERRITORY.

The facts given above clearly show that sheep husbandry is well adapted to Arizona, and that within a single decade it has risen from a small beginning to almost the leading live-stock pursuit. Notwithstanding the fact that cattle have had the prestige as well as priority on the ranges heretofore, it is acknowledged that they are gradually giving way to sheep, simply because they are not so well adapted to the country or as profitable a class of stock to handle. In the southern and central portions of Arizona the recent dry seasons have cut short the grazing to a considerable extent, and very large numbers of cattle are being shipped to northern ranges of Dakota and Montana. Owing to this fact, and the prevailing low prices of cattle, the numbers in the Terri-

tory may not be expected to increase, while sheep will, as in the past, continue to increase in numbers so long as the present favorable conditions continue.

The breed or class of sheep most numerous in Arizona are Merinos, or the grade of the French and the Spanish breeds. Most of the original flocks came from California, and only a small per cent of the sheep here are of the Mexican foundation, and these are found principally in Apache County. However, they are what are known as improved Mexicans. In Apache County there are 150,000 sheep, of which one-third are improved Mexicans. The sheep of the Territory are large and robust, very similar to those raised in Wyoming and Montana.

The range in numbers of the different holdings by individuals or firms is from 500 to 50,000 head. That is the extreme of the number owned. No one owns over 50,000 and none less than 500. They are run in flocks of from 2,000 to 2,500, and as a rule very few owners have less than one and not many over three or four flocks.

The general character of the range is such as is common to a mountainous country, consisting of the mesas or table-lands, the mountain range and the sandy and alkali valleys. The limestone soil is the preferred range. In fact any kind of range that is convenient to water is utilized. The summer grazing is had in the mountains and table-lands of northern Arizona, where the altitude is about 6,000 feet. Here there is considerable pine timber which supplies refreshing shade during the hot summer days, and for water the sheep are supplied by permanent springs, although in some localities where water is scarce they have to be watered from wells or tanks. During the winter the flocks are taken down to the valleys and plains.

Sheep-owners do not have any food or shelter other than that provided by nature, and the land utilized for grazing is public domain and is used in common. Some sheepmen own or control water rights, but that is the extent of land holding.

Each flock has one or two herders who are constantly with the flocks, which are kept moving from place to place on the range so as to keep the sheep on fresh pasturage. The cost of sheep-raising is confined mainly to the expense of herding, lambing, and marketing the wool. Extra help is required during the lambing and shearing seasons, so that the total cost is made up by the expense of handling. The feed is free for all.

On account of the constant attendance both day and night of the herders with the flocks, the loss is quite small from either the depredations of wild animals or exposure. The average loss from wolves or other wild animals does not exceed from 1 to 5 per cent, or a general average of about 2 per cent. The loss from exposure is somewhat larger, a range of 3 to 10 per cent, or an average of not less than 5 per cent. The sheep that are lost from this source are the weak lambs and aged ewes.

Sheep that are brought in from other States do not do well the first year, or until they become acclimated and accustomed to methods of handling, but usually the mortality is quite small.

There are quite a number of sheepmen who make a specialty of breeding pure-bred Merinos or half-blood French for the home trade, and the majority of rams used in the Territory are raised by Arizona breeders. Some buy their rams, both Shropshire and Spanish Merinos, of eastern breeders, but the home breeders have the bulk of the ram trade. California has a very fair trade here, especially with French Merinos. It was rather surprising to note that so many were trying the experiment of the Shropshire cross with a view to securing a better carcass in order to realize better prices for the muttons, mainly to Los Angeles and San Francisco markets as well as to the eastern feeders and packers, who pay more per head for large-sized wethers. Those who have tried this mutton cross seem to be quite well pleased. The bulk of the rams used, however, are two years old and upward—Merino or French bucks.

The general rule has been to provide about three rams to each one hundred ewes, but in the better flocks, where the best rams are used, from fifty to seventy-five ewes are bred to the ram, especially if the buck is in good condition and feed is plenty. The ewes are bred generally during November or December; only a very few breed earlier unless located down in the valleys or further south. The preferred time for turning in the rams is about December 1, and they are allowed to remain with the flock from thirty to sixty days. From 1 to 10 per cent of the ewes fail to breed, or perhaps an average of 5 per cent for the Territory. The per cent of lambs raised is from 70 to 90 per cent, or an average of not less than 75 per cent.

Formerly the main object of the sheep-breeder was to produce wool and sheep which had always been bred with especial reference to that end, but as the ewes were ordinarily good-sized Merinos, having considerable French blood in the flocks, they soon found that these large-bodied Merinos with good constitutions were considered fairly good mutton sheep, and there was considerable of a demand for them in California markets as well as a local demand. Buyers offered prices for fat wethers which realized the owner more than the wool, so that during recent years the flockmasters have bred with some special reference to the mutton qualities of the animal; that is, while the sheepmen did not change to mutton bucks except as an experiment, they selected the ram having mutton tendencies without sacrificing the wool qualities. Those who have tried the Shropshire cross are well pleased with the experiment. They secure a larger carcass and usually a more vigorous and robust lamb. From the satisfaction expressed with this cross it bids fair to become quite popular. The ewes are bred back to pure-bred Spanish or French Merino rams with good effect.

The time of shearing sheep in Arizona usually takes place in May or

June, when only one clip is made. But quite a number continue the practice of shearing sheep twice a year, the first clip during April or May, and frequently as early as March. The fall clip is usually shorn during September or October. The practice of shearing twice a year is falling into disfavor, and is not nearly so common as formerly. The early spring and the fall clips shrink in scouring about 63 per cent, while the single annual clip has an average shrinkage of from 67 to 70 per cent. No wool produced west of the Mississippi River has a greater average shrinkage than Arizona wool, yet it is very desirable wool notwithstanding this fact, because of the length of staple and fine quality of the fiber.

When a flockmaster is ready to shear his sheep he usually constructs a temporary yard and shearing shed for the purpose at some of the regular summer camps, and engages a band of shearers who generally receive 6 cents per head. Each fleece is tied up separately and sacked ready for shipment. Each fleece usually weighs from 6 to 11 pounds, or an average of about 8 pounds for the Territory, of fine and fine-medium grades, which constitutes the greater part of the wool. There is very little coarse wool produced.

During the shearing season buyers and representatives of commission houses are generally on hand ready to secure the wool, which is disposed of at once. It is a rare thing for a grower to hold or store his wool. It is either sold f. o. b. or consigned. The bulk of the wool is shipped East, although formerly a great deal of the wool was sold to California buyers. The growers prefer to sell at home, as it costs about 3 cents per pound to ship to Eastern markets, and usually considerable time elapses before returns are received. The favorite Eastern markets are Philadelphia and Boston, although the wool merchants of Albuquerque handle a great amount, their traveling men buying it direct from the growers.

The greater portion of the wool shipments are received at points along the Atlantic and Pacific Railroad, the principal stations being in the order named, commencing with the station farther west: Peach Springs, Prescott Junction, Challender, Bellemont, Flagstaff, Canyon Diablo, Winslow, Holbrook, and Navajo Springs. The bulk of the Arizona clip is shipped from the stations named. During 1891 there was shipped East over this line of road 4,438,988 pounds, and from Holbrook alone there was shipped 605,804 pounds.

There is no great amount of wool shipped from points on the Southern Pacific Railroad, which is located too far south, yet during the year there was shipped West 128,000 pounds and East 256,000 pounds, or 384,000 pounds in all. These figures are for known quantities shipped, but do not include all the wool produced. From estimates there was produced last year over 500,000 pounds, not including the Navajo Indian clip, which exceeded 1,000,000 pounds.

Sheep-owners estimate that from 15 to 25 per cent of the flock is dis-

posed of each year as muttons, which go to California markets, principally to Los Angeles and San Francisco. Buyers from these points have them delivered f. o. b. and pay from $3 to $3.50 per head. The shipments are about equally divided as to destination. The Eastern shipments go to Kansas City. During 1891 there were 117 double-deck cars of fat sheep shipped out of Arizona, or 35,000 head in all; 18,000 head were shipped to Kansas City and 17,000 head to the Pacific coast. Of the wethers which were driven out to go to feeding districts the number does not seem to be known. The average live weight of the sheep was from 95 to 115 pounds.

The average cost per sheep a year is variously estimated, caused mainly by the difference in expense of ranch improvements. The principal item of expense is for herders and foremen. Herders receive from $30 to $35 per month, and the foreman $40, board included. Flockmasters estimate the cost per sheep from 40 cents to $1, including all expenses, or an average of the reports received would be about 70 cents for the Territory, which is a safe outside estimate.

The chief advantages that Arizona flockmasters claim for the country is the fact that sheep easily subsist the year round on the native grasses without other feed or shelter, and the range or pasturage utilized can never be used for any other purpose except grazing, the only danger being the fear of overstocking, especially during long protracted drought. The climate of the Territory is particularly healthful and invigorating and well adapted to live stock, also the absence of disease except scab, which is now so well understood that it is easily eradicated or controlled.

The chief obstacles encountered are the long distance from markets, the scarcity of water, and the liability of depredation of wild animals, yet the advantages so far outweigh the disadvantages and difficulties present and prospective, that it is no great source of discomfort or discouragement, and does not especially concern the growers. The long distance from the market is the only serious difficulty which may not largely be overcome by organization and coöperation of the sheepmen.

Most sheep-owners report the industry as very prosperous and the outlook for the future as very bright, while others, though not discouraged, are not disposed to regard the future so favorably for fear of overstocking the range, high freight rates, and the fear of low-priced wool. When the business can be made to pay 50 per cent profit as it does in most cases, after sustaining an annual loss of 10 per cent, by reason of prevailing methods of management, it does not seem that it is possible to vastly increase the profits by improved methods of conducting the business. A better class of stock and better personal attention instead of largely letting the sheep shift for themselves would greatly augment the profits of the business. The annual losses could be largely curtailed, and a system of culling the flocks each year as is

now being done in other Western States, instead of continuing to breed inferior and ill-conditioned and decrepit ewes, also by using more generally a better class of rams, would add greatly to the value of the industry and avoid future contingencies. Sheepmen should take an interest in irrigation, artesian wells, and the storage of water by reservoirs, all of which must greatly benefit the industry as well as the whole Territory.

THE NUMBER AND VALUE OF ARIZONA SHEEP.

The number of sheep shorn in Arizona during the present year is not less than 800,000 head, producing 6,400,000 pounds of wool. There will also be sold for shipment to Eastern and Western markets during 1892 not less than 100,000 mature wethers. The cash income from the sheep industry for the year will not be less than $1,000,000, a 10 per cent earning on $10,000,000, the value of sheep industry of the Territory. Taking the lamb crop of 1892, less the mutton sold from the flocks, and there will remain at the close of the present year at least 1,000,000 sheep.

THE NAVAJO SHEEP INDUSTRY.

From the most reliable information obtainable the Navajo Indians have 400,000 sheep and 100,000 goats, and the wool clip will not exceed 1,300,000 pounds. The sheep are slowly increasing in numbers but not improving in quality; in fact, no attempt is made in the direction of grading up the sheep unless the Government does it for them. Very common rams are used, and they run with the flocks during the entire year. It is said by traders that lambs are dropped every month in the year. They are run in flocks of 400 to 500 head, and no shelter is provided. The wool is coarse, and is utilized only for carpets and blankets. The average fleece does not exceed 3 to 3½ pounds, and is shorn during April, May, or June. The Indians do their own shearing, and use a knife or piece of sharpened iron. But few use sheep shears. The wool is sold to the various traders at prices ranging from 9 to 12 cents. One-third of the Navajo clip is black wool. The herding is done by the old women and children. No mutton is ever shipped; all is consumed at home. The woolen blankets manufactured by the Navajo Indians on their primitive looms are an industrial curiosity. The finer blankets often require weeks or months to complete.

OVERSTOCKING THE RANGE.

Should the number of live stock continue to increase in the Territory, grave fears are expressed by stockmen that in some portions of Arizona the range will become overstocked. This can only be obviated by a development of irrigation. The limited development so far demonstrates the practicability of utilizing the streams by means of canals and reservoirs for saving much of the flood water now wasted. It is said by competent authority that if this was done an area of over 18,000,000 acres could be cultivated, which would support and maintain

a population of over 4,000,000 people and double the present live stock of the Territory.

ARIZONA RANGE GRASSES.

From Bulletin No. 2 of the Agricultural Experiment Station, which was issued last September, I extract the following notes on some of the range grasses:

The country embraced in what is known as the "Great American Basin," in which the whole of Arizona is included, has a vegetation in most respects entirely different than elsewhere in the United States. The soft and succulent grasses of the Eastern and Central States have given place to a great variety of grasses, mostly with short, rigid leaves and hard stems or culms. Experiment has already demonstrated that the lack of moisture makes it impossible for the Eastern grasses to succeed here, hence it is to our native grasses we will have to look in the development of grasses in this Territory.

It yet remains to be determined which of these grasses will be of greatest value under cultivation, or will succeed with the least amount of water. Although a large number of our native grasses are hard and rigid as a rule, they are eagerly eaten by horses and cattle, and many of them contain much more nutritive matter than the more succulent grasses of the East.

The physical conditions of Arizona are such that only comparatively a small per cent of her lands under present conditions can be brought under cultivation. Much of the remainder is valuable grazing land, but still there are areas which, from their lack of accessible watering places for stock, are of little value except for their mineral deposits.

Of the vast region supporting thousands of head of horses, cattle, and sheep, the better part of the grass forage consists of less than a dozen indigenous species. It is true that during a large part of the year the cattle pick about, in many places feeding mostly upon the foliage of shrubs, only getting a dainty bit of grass here and there; but it is the few species of grass that spring into rapid growth after the late summer rains, and cover the mesa for miles about, that the stockmen depend upon to put their stock in fit condition for the Kansas and California market. The meager rains during the past summer have done much to shorten the fall feed, and in general throughout the Territory the feed is much more scant than is usual at this season of the year.

A large number of species grow along rivers and creeks, in the close vicinity of the tanks and springs and in other moist places. These grasses, although of great variety, are—with the exception of *Distichlis maritima*, an almost worthless forage grass, and a few others—only found in isolated bunches. In fact, nowhere in Arizona do we find a continuous natural sod.

Altogether these grasses furnish but a small part of the forage of the range, as they only grow in the vicinity of water, where their roots evidently reach moisture throughout the year. Many of them are excellent forage plants so far as they go, but they cover a very small per cent of the entire range. Ordinarily they are kept cropped short by stock as they congregate about the watering places to drink.

The second class, and by far the most important, are the grasses that find a foothold on the mesas, along the sides of mountains and in valleys. Covering large areas they furnish the greater part of the grass forage of the Territory. These grasses are of but a few species and include the grasses known among stockmen as "mesquite," "gramma," and "saccato." Many of these grasses have hard and wiry leaves and culms, but are very nutritious and are generally well liked by stock. They grow rapidly after the summer rains, furnishing fine forage for the fall and winter months.

The boutelouas, generally known as "gramma grass," are the most important of the proper range grasses of Arizona. A number of species of this Southwestern genus can be found on nearly every range in the Territory.

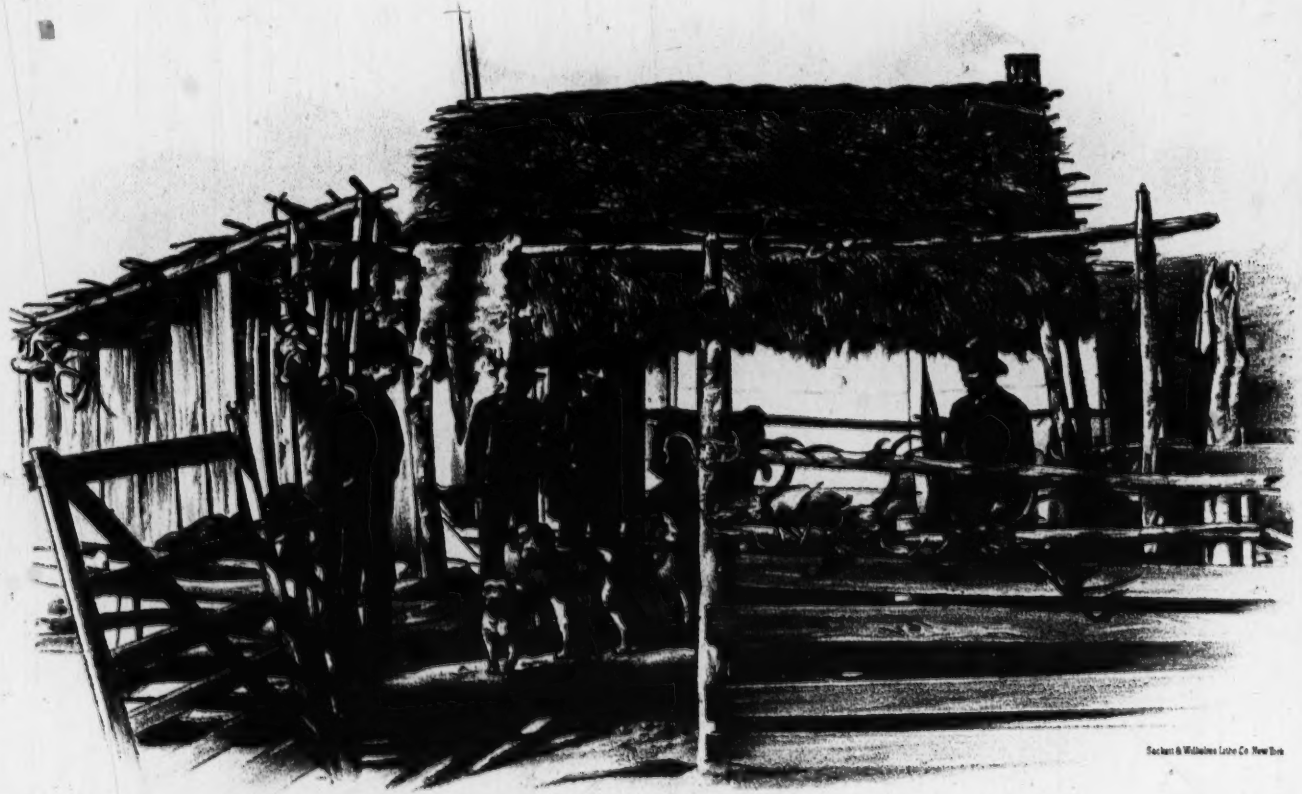
IN CAMP EN ROUTE TO WINTER RANGE, ARIZONA.

LAMB CORRAL ON RANCH NEAR SANTA FE, N. MEX.

SINGLE WOOL CLIP OF A NEW MEXICO RANCH.

DIPPING SHEEP, SOUTHWEST TEXAS.

FEEDING-PENS ON A RAM RANCH, WESTERN TEXAS.



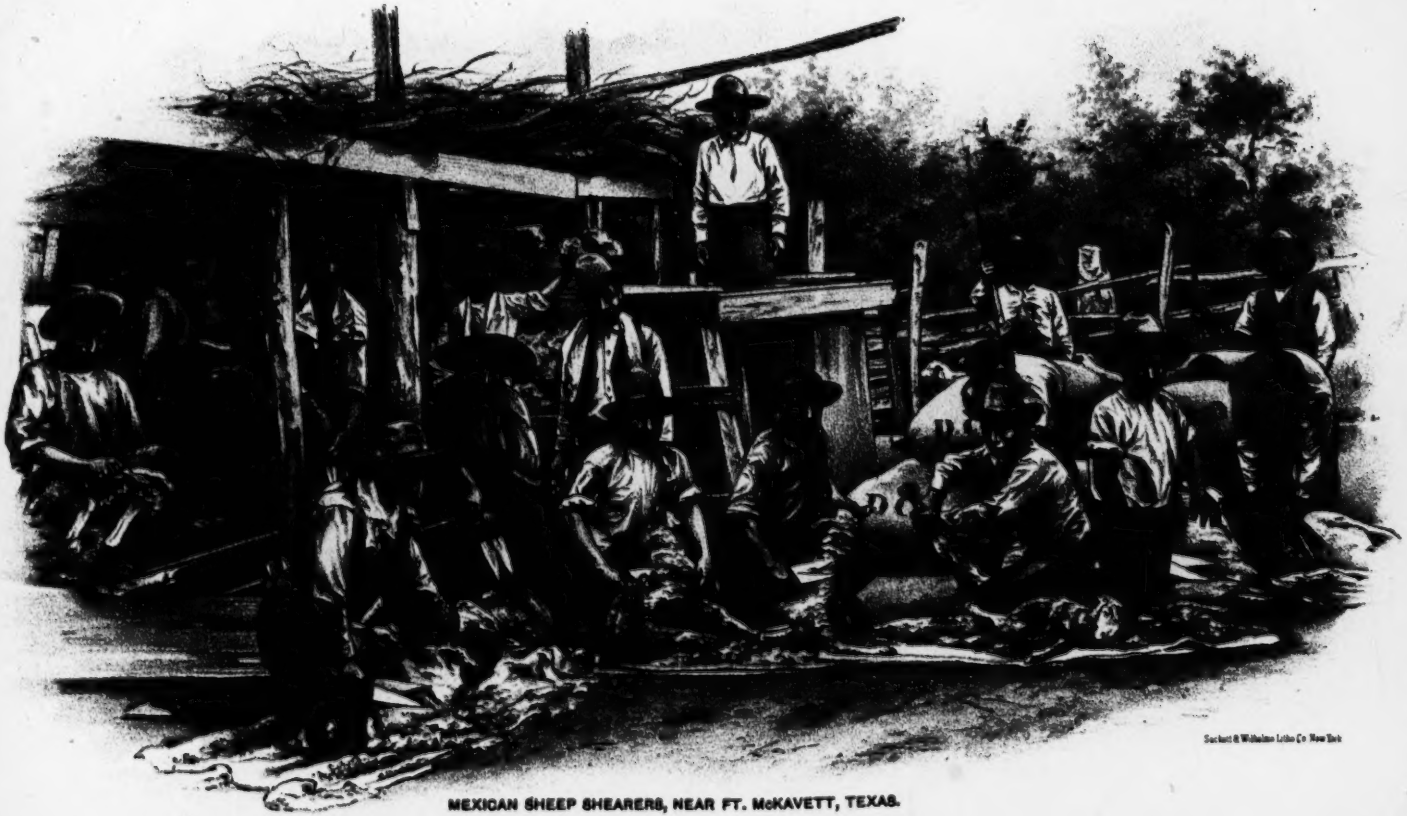
Sackett & Wilhelms Litho Co. New York

RANCH ON DEVIL'S RIVER, TEXAS.

VIEW ON DEVIL'S RIVER, TEXAS.

Sarony & Wilhelms Litho Co New York

IRON MOUNTAIN RANCH, BUCHEL COUNTY, TEXAS.



MEXICAN SHEEP SHEARERS, NEAR FT. McKAVETT, TEXAS.

CHAPTER V.

THE SHEEP INDUSTRY IN CALIFORNIA, OREGON, AND WASHINGTON.

CALIFORNIA.

The first domestic sheep were brought to California from Mexico by the Catholic missionaries. They were used as an agency in the missionary work of christianizing and civilizing the native race by teaching the care of sheep to the men and the manufacture of clothing to the women. They also contributed toward furnishing a food supply to all, thus rendering needless the wild hunter's life.

The character of the sheep was of a very low grade, both as to wool and mutton products. It is assumed by some writers that the immediate improvement which results from crossing them with the Merino is an indication that these sheep were of Merino origin, brought into Mexico by the enterprise of Spanish colonists and suffered to degenerate by neglect. It is much more probable they were of the coarse-wooled sheep kept on the lowlands of Spain, against the deportation of which, by emigrants to America, the Spanish laws did not intervene, as in the case of the fine-wooled Merino. Of the latter Spain held a monopoly, which was so strictly guarded by law that they could not be exported but by the king's permission. It was only by such permission that flocks were drawn from Spain by the elector of Saxony and the kings of France and of England. But whether these Mexican sheep were descendants from the royal flocks of the golden-fleeced Merino or the plebeian coarse-wooled stocks of the Spanish farms, they were, when in the hands of the early Catholic missionaries of California, a small-boned, light-bodied sheep, generally white-faced and white-fleeced. The ewes were mostly hornless, but in all flocks there were a few ewes with two and sometimes four horns. These sheep were of nearly all colors, indicative of carelessness in breeding for many generations. The fleece was of medium length, coarse, dry, and wiry, giving an average of about two pounds of wool suitable for the rude manufacture of the Indian neophytes of the missions, or, as it is now used, for carpets.

Few, if any of these sheep passed into the hands of even the Mexican settlers of California previous to the secularization of the missions. The law secularizing the missions placed the disposal of the live stock in the hands of the government officers, called administrators, and under them the property was scattered by sale and use. From 1832, when the process began, until 1848, when the discovery of gold broke all recorded connection between the animal industries of California under the rule of the Latin race and its Saxon successors, sheep are

rarely mentioned. From 1832 until the accession of California to the United States was a time of local strife for rule among the leading Mexican families, so that there is little reliable history of those sixteen years. A few points, however, indicate that sheep which aggregated at one time 150,000 head under mission rule, rapidly diminished in numbers. The records we have show the ownership of 4,000 head, outside the missions in Los Angeles County, in 1842; and at this same date Jacob P. Lease (an American who had married a sister of Gen. Vallejo), was found by a party of Oregon settlers who went to California to purchase cattle, to be owner of a flock of sheep which he was induced to drive to Oregon for sale, as related hereafter.

In 1848, Capt. Sutter—the most prominent figure in Californian history of that date—had from 12,000 to 15,000 sheep, and was using them as a source of meat supply for the working party engaged with his partner (Jas. A. Marshall) when gold was discovered in the mill race they were constructing; a discovery which unsettled for a time all kinds of business. We can only surmise that as soon as the injurious effect of a salt-meat diet began to manifest itself by scurvy amongst the miners, fresh mutton would be eagerly bought in the mining camps as well as in the incipient cities. Under this demand the remnants of the mission flocks were soon consumed. Buyers were in Oregon collecting what they could get in 1850, to drive to California for sale to the miners. The writer made his first sale of mutton sheep that year, for that purpose, at $5 per head. Two years later he sold lambs at $12, and mature wethers sold at Portland for $15 per head. Such rates ruled at the same dates in parts of California, and enterprising men began to drive from New Mexico and from the Western States to meet the demand.

So far as we can now learn most of the enterprises of driving sheep from New Mexico, which began in 1852, were by Mexicans, though the famous American mountaineer and guide, Kit Carson, who had settled near Taos, was one of the first. The aggregate drives from 1852 to 1860 are represented to have numbered 551,000 head. But between these dates, citizens of the United States were busy driving from the Western States a much better class of sheep with the double purpose of engaging in wool-growing and mutton production. The names of these pioneers who thus drove flocks of sheep from 1,500 to 2,000 miles across an unsettled country inhabited by wild beasts and savage men, deserve record. Those of Peters, McMahon, Patterson Brothers, W. W. Hollister, H. H. Hollister, T. and B. Flint, J. Bixby, W. W. Cole, and James Moore appear amongst the very first. The Hollister brothers were from Ohio, and probably knew the importance of blood in sheep. Their first driving seems to have been the best stock they could collect in Missouri and Illinois. It is to T. M. and T. C. McConnell, however, that the glory belongs of introducing the golden fleece from Vermont to California. Previous to 1856 Thomas M. McConnell had mined and traded to miners some years with fair success. In agreement with his brother, T. C. McConnell, as to the subsequent care of the sheep, he

paid to Merril, Bingham, and Jesse Hines $1,000 for seven head of pure Merinos and took them via Panama. The cost of freighting them to California was $85 per head, and but for Mr. McConnell's resisting the demands of subordinate railroad officials for $450 for passing the sheep from Aspinwall to Panama, the transporation bill would have reached $1,000. His appeal to the chief officer, Col. Totten, however, procured generous treatment. Mr. McConnell lives yet and has breeding stations at Camp McDermott, Nev., besides keeping a flock at his home farm near Elk Grove, Sacramento County, Cal. So also does Mrs. E. M. Wilson, who was left a widow by the death of T. C. McConnell not many years after the enterprise was begun, but who has kept up the flock with satisfactory results ever since. This enterprise of the McConnell brothers, and others before mentioned, were the movements of home-building men engaging in what was to be the principal business of their lives.

But the earliest movement which brought another less valuable strain of Merino blood into California was by the Whitney brothers, George and J. P. I insert here letters from both Mr. McConnell and Mr. J. P. Whitney. Each letter in its way is full of instruction as to influences now bearing upon the sheep and wool industry of California and the entire Pacific slope, and shows the spirit of early enterprise. Mr. McConnell's letter bears date of Elk Grove, Sacramento County, Cal., February 11, 1892, and is as follows:

SIR: I imported from Vermont seven head of Spanish Merino sheep of the Infantado variety from the flock of Jesse Hines—four ewes and three rams. The ewes were bred to Edwin Hammond's celebrated ram Sweepstakes. They arrived in San Francisco on August 28, 1856, at a cost of $85 per head for freight alone. These sheep all descended from the Atwood flock, of Connecticut, as bred by Edwin Hammond, of Middlebury, Addison County, Vt., who is acknowledged to have done more to improve the wool-bearing sheep known as the "American Merino" than any other man living or dead, and has made the Vermont or "American Merino" the leading wool sheep of the world.

This shipment of August, 1856, was undoubtedly the pioneer one of California if not the Pacific coast. It was made under all manner of discouragements. Many predicted they would all die before they could reach California; that they could not stand a sea voyage through the tropics; and that they would not do well in a climate like that of California. It is needless to say to you that this shipment of sheep has been worth millions of dollars to California sheep-raisers. I have bred sheep ever since from the same strain of blood. I have never done any cross-breeding. I think all changes profitable to be made should be by selection. The improvement made in this class of sheep since their importation from Spain is wonderful. I remember the time when it was thought to be a large fleece for a ram to shear 14 pounds and a ewe 8 pounds. Now ewes shear from 10 to 20 pounds and rams from 15 to 30 pounds in the grease.

No one can tell what the future sheep will do. When men of brain like Edwin Hammond, William R. Sanford, Victor Wright, Merrill Bingham, Jones & Rockwell, and Col. Stowell devote their time and efforts to any particular object progress is sure to be made.

The next shipment made to this State was by John D. Patterson. They arrived here in October or November, 1856, and were French Merinos. The sheep-breeders of Vermont had given this class of sheep a good and fair trial and condemned them. They were imported from France by George W. Taintor and were called Taintor's

sheep for sometime and later the Blasom sheep, and their descendants are now owned by J. H. Glide. These sheep were from the French Government or Rambouillet flock. Years afterwards J. D. Patterson imported the Spanish Merino.

The third and next importation was by Jones & Rockwell, of Middlebury, Vt., in 1859 or 1860—I am not quite sure which year. I shipped or imported nine sheep in 1860 and 1863, all of them Spanish Merino.

The business of sheep-raising and wool-growing had by this time grown to large proportions and great importance, and from this time many engaged in the business of importing sheep from Vermont. Large importations took place after the completion of the Central Pacific Railroad, in 1869 and 1870, 1871, 1872, and 1873, by L. J. Arcutt, George Hammond (son of Edwin Hammond), Severance & Peet, and many others.

Some of the latest shipments were by sheep-traders and were not from reliable and well-bred flocks. Few unacquainted with the history of this business can realize what an improvement was wrought by the infusion of this Vermont blood into the flocks of the Pacific coast. The sheep industry made headway under many difficulties, among which were wild animals and hostile cattlemen bitterly opposed to the sheepmen. Laws were passed prohibiting sheep from grazing upon the public domain. Every obstruction possible was thrown in the way by the half-savage cowboys, urged on by the cattle kings. Still the business had so much merit in it that it has prospered and is a good business to-day.

You ask my opinion as to the propriety of preventing sheep from grazing on the mountain ranges. I think such prevention would be a great outrage. This opposition and hue and cry about sheep ruining the forests nearly all emanates from the cattlemen. I took large bands of sheep into the mountains twenty years for summer grazing, and have been familiar with large sections of the Sierra Nevada Mountains for the past forty-two years, and I can certify from actual experience and knowledge that there have been less fires since the grass and undergrowth have been fed off than before. And since roads and ditches have been made large and extensive fires do not occur. The miners cut off the large timber in the mining section, and now there are twenty young trees where there was one before, and less danger from fires than formerly. Fires originate from hunters, prospectors, and city tourists.

It would be an outrage upon human rights to maintain a military patrol to look after the forests of the Sierra Nevada Mountains. It would require the entire Army, but it would make nice positions for a lot of officers and men, and increase the taxation of the already overburdened farmer and taxpayer. The sheep-raiser has already been harassed in so many ways that many have gone out of the business, and mutton chops are a scarce article in the market. Mutton is now worth from 8 to 10 cents; it sold here for years from 2½ to 3½.

Yours, truly,

THOMAS MCCONNELL.

Mr. Whitney's letter was written at Pueblo, Colo., February 29, 1892, and is as follows:

SIR: It is pretty hard for me to make an estimate on wool-growing. It was in 1855 that my brother went to Australia, and with myself bought 350 high-bred sheep, which were Spanish Merino, but had a mixture of Saxony blood, according to the plan of the particular breeder in Australia. Don't know who the sheep were bought of. They cost me $50 a head. I got out thoroughbred Spanish bucks from Vermont, which cost me a great deal of money, and began breeding on the Spring Valley Ranch, near Rocklin, in Placer County, 20 miles above Sacramento, and have been at it ever since. We only got 120 head safe in California out of our 350 which we bought in Australia. We made money in selling bucks and good ewes. Land was cheap and the business went slow for years, but after years sold hundreds of bucks and ewes at from $25 to $50 per head. We worked up slowly, and in 1862 sold

$12,000 worth of bucks and ewes. I have now from 12,000 to 14,000 head, I suppose. I have always got the highest price received from any large sheep ranch in California for my wool, and for twenty years have sold wholly in Boston, which is headquarters for my general business. It was twenty years before I ever saw any money in the business, as I continued to buy land and kept in debt. I have been so much engaged in other kinds of business, mining, cattle, manufacturing, lands, real estate in cities, etc., that I have not kept my matters segregated as much as others in one business may have done, so I can not tell accurately what the business cost and paid. But I estimated some years ago that my 120 sheep had paid me $1,000,000, principally from the acquisition and appreciation of lands, and have sold many hundreds of thousands of dollars in wool and mutton. I estimate that those sheep which cost me so high, when common sheep were selling for a few dollars, have been worth from $8,000 to $10,000 per head to me, as they cleared over 20,000 acres of land which cost low, and now I am selling land in small parcels at from $150 to $300 per acre.

Yours, very truly,

J. PARKER WHITNEY.

The foregoing letter of Mr. Whitney I deem valuable, both as showing the enterprise of early California life, and also as giving cogent reasons why, on account of the rise in land values, few if any men engaged in sheep husbandry in California or even in Oregon or Washington, up to this date, can fairly charge the use of land against their flocks.

The records of exhibitions at the California State fair for 1856 show Aram & Knox as exhibitors of Leicestershires and Southdowns. In those of 1857 a first premium was awarded to Searles & Win, of Solano, for French Merino ram; and second premium to James Sheppard, of Santa Clara.

In 1859 George Whitney, brother of J. P. Whitney before mentioned, of Placer County, exhibited sheep as Saxon Merino; J. D. Patterson, French Merino; C. Gallup, J. D. Stephens, and Haynes & Cheney, Southdowns; Daniel Davidson and Mr. Brewer, Leicesters.

In 1860, which I consider the end of the pioneer period of Pacific coast sheep industry, A. L. Bingham exhibited seven pens of Merinos, amongst them (all good) was "a Silesian Merino ram which attracted marked attention." J. D. Patterson had Webb (Jonas) Southdowns and French Merinos; W. D. Stanwood, Southdowns; J. B. Hoyt had Merinos. Four Cheviots were exhibited, and William M. Landrum exhibited Angora goats.

While the foregoing men were thus showing the stocks of their early beginnings, another class of men were too busy to attend exhibitions. Some of those already mentioned as making the first drives across the plains and mountains separating the Missouri River from the plains of California, settled upon sheep husbandry as a chosen pursuit, and returned to the Mississippi Valley for the best stocks of ewes and rams they could buy in quantities. Between 1856 and 1860 several parties were engaged driving across the plains sheep designed as stocks for wool-growing purposes, among which appear the names of Rawson, Peters, Murray Brothers, Grayson, H. H. Hollister, the Dibblee Brothers,

and Joseph W. Cooper. From the latter (who has now retired from active business with competence for his declining days and just pride in the results of his well-directed youthful energies) I am enabled to give a brief letter, which indicates the character of the work:

In 1858 H. H. Hollister, the Dibblee Brothers, and Cooper collected 12,000 sheep in Illinois and Missouri. About one-half were high-bred Ohio Merinos and the other half good, strong grades of English breeds, all chosen with reference to improving the Mexican sheep. The flock was driven into New Mexico and there kept for the winter on the bottoms of the Rio Grande, in close proximity to a strong village of Apache Indians. The good neighborhood of the savages was so well maintained that the stock wintered well; giving an increase of 8,000 lambs. From the wintering grounds the flock was started as early in the spring of 1859 as it was judged best, of necessity, moving with extreme care both as to the welfare of the flock and the safety of the drivers. They got into Los Angeles County in January, 1860, with 4,400 sheep, and immediately commenced a profitable business selling rams. They also began the use of the best rams of the Vermont type and increased their flocks by joining interests with Col. W. W. Hollister. In 1862 Col. W. W. Hollister, Hubbard Hollister, Albert Dibblee, and T. B. Dibblee formed a partnership and purchased the Lompoc ranch in Santa Barbara County, containing 42,085 acres, for $1.50 per acre—something over $60,000 for the ranch. The cost of obtaining legal possession was about $15,000. They stocked it with 10,000 head of sheep, mostly grade Merinos; and from the profits of that investment they were able to purchase ranch after ranch until, in 1874, their aggregate possessions amounted to 140,000 acres. As illustrating the natural increase of sheep in favorable seasons the following is given as one of the results of the operations of this company:

In 1862 these flockmasters made a special purchase of 300 pure Spanish Merino ewes, and in 1864 added 100 more to the number. In 1875 the count was 14,192 ewes, which with the same number of males during the same period made the aggregate increase 28,000 in about twelve years. In 1872 their wool clip exceeded 250,000 pounds, selling at 25 cents for the spring clip and 15 cents for the fall.

The total sales of wool amounted to	$84,375
Sales of sheep, 11,016 head at	40,408
Total	124,783

In 1873 the clip was 338,131 pounds.

Proceeds	$74,876
Sheep sold, 14,500	48,408
Total	123,284

In 1874 the clip was 316,597 pounds.

Proceeds	$70,316
Sheep sold, 16,500	53,933
Total	124,249

The sales were exceptionally large in 1874, on account of the sale of the Lompoc ranch, appraised at $40 per acre. It was put up for sale at public auction in small tracts and town lots. The first 40 acres were bid off at $76 per acre. The day's sales amounted to the value of $700,000, and left about 35,000 acres unsold, for which the original owners offered $370,000.

The annual expenses for the conduct of the above wool-growing and sheep-breeding business was from $30,000 to $35,000.

Another class of men exercised a most potent influence upon the sheep and wool industry of California and Oregon up to and including 1860. They may be classed as mercantile breeders. Of these the ear-

liest to arrive was John D. Patterson, of New York, who came with French Merinos and Southdowns; Solomon W. Jewett, of Vermont, was busily engaged sending sheep to his son, then located in Kern County, and still there as a breeder. Severance & Peet came somewhat later, but brought first-class stock of the Vermont type. But the firm of this kind which wielded the most potent influence on the entire Pacific slope, at that early day, was that of R. J. Jones and S. B. Rockwell, of Addison County, Vt. The influence of the writings of Mr. Rockwell through the local press wherever he went was like a trumpet call. Especially was this the case in Oregon, where the home-builders who had carried the banner of the Republic across the plains and mountains, and instituted a provisional government under it in 1843, were quietly pursuing their purposes. To name $500 as the price of one of these small greasy sheep was like an electric shock to most of these people, and some of them entered into newspaper protests against what they called "an imposition, as well as an extortion." The war was warm for a time, but of course enterprise and intelligence won. There had at this date been no sheep-herding registers established anywhere, and have not yet been on the Pacific slope, although flocks were founded from the best sheep of Vermont, and additions have been of the same character.

PRESENT CONDITION OF CALIFORNIA SHEEP AND WOOL INDUSTRIES.

Having already given a brief sketch of the beginnings and the beginners of sheep husbandry in California, it seems fitting here to give the names of those most prominently and publicly known as sheep-breeders now, and the line of breeding pursued, so far as known. The flocks of Thomas McConnell and of Mrs. E. M. Wilson, founded on the pioneer importation from Vermont, are yet kept up and purely bred. J. H. Glide, of Sacramento, keeps pure representatives of the French Merinos, introduced by J. D. Patterson, and continued by Robert Blacow. Frank Bullard, of Woodland, and Woolsey & Sons, of Fulton, keep Merinos founded in California by Severance & Peet. The latter have begun crossing with the Shropshire. Kirkpatrick & Whitacre, of Knights Ferry, breed French and American (improved Spanish), and crosses between these families. H. Mecham, of Petaluma, breeds pure polled American Merino and pure Shropshires, and crosses between; R. H. Crane, of the same place, Southdowns; J. B. Hoyt, of Suisun, Shropshires; J. W. Grigsby and William Middleton, Napa, Southdowns; Martin Kingsley, Santa Cruz, Southdowns; T. J. Knight, of Table Bluff, and J. C. Barber, of Ferndale, Cotswolds; J. Askew, El Dorado, Cotswolds and Southdowns; J. E. Lucas, San Rafael, Shropshires; R. M. Wilson, of Newman, and A. D. Stusifer, Merinos; S. N. Straube, Fresno, Merinos; E. E. Giddings, Dinuba, Merinos; Harry Quinn, Delano, Merinos; Sol. S. Jewett, Bakersfield, Merinos; Parmein Bros., Los Angeles, and Premain, Piermont, Merinos. Many large wool-growers drew out male lambs for sale as breeders, which are largely used in order to lessen expenses.

An attempt to start a trade in improved American Merino sheep to Australia was made some eight years ago by Mr. Shubert, of the wool commission firm of Shubert & Beal, San Francisco. A lot of somewhat less than 100 head was shipped, and the parties were offered $5,000 profit on the venture the second day after landing, but refused. The colonial government then took possession of the sheep and kept them in quarantine nearly a year under the scab law. Nothing was realized at last but vexation, and no attempt has been made since to ship from California, although the market there for such sheep is very good. A Sydney paper of July 25, 1891, reports the sale of choice stock rams as high as 600 and 710 guineas ($3,150 to $3,725).

The American improved Merino is the most popular of the Merino family of sheep at present in the Australian colonies, and there is no question but a trade profitable to both parties could be inaugurated from the Pacific ports if international rules in regard to the inspection of the stock sent from one country to the other could be adopted and enforced, so as to permit the progress of animals to their destination without delay. There are really no common sheep (sheep of no particular line of breeding) in California at the present time. During the years of prosperity in woolgrowing as the primary object, all the sheep in the State graded from half-blood Merino upward. The decline of sheep classed as fine on the assessment rolls—from 66,618 in 1873 to 4,148 in 1887—is to be taken more as an indication that importations of Merino blood had become unnecessary than that its use had ceased, until the agitation following the change in the law of 1883, by depressing the price of wool and creating doubt as to the future national policy caused men to leave the business. Sheep diminished in numbers because flock-owners ceased to breed their flocks, but fattened and sold them for mutton. It was not, however, national legislation alone which caused the decline. There probably never was in any country so general a movement toward planting land, with a view to fruit production, as has taken place in California during the past seven years. The product in many cases yielded no profit to growers in 1891, and there will apparently be an additional number of trees coming into bearing annually for the next five years. It is scarcely presumable that means of transportation will be so much cheapened as to enable the increased quantity of fruits to reach profitable markets.

The number of sheep in California as found by the county assessor in the years given below aggregated in number and value for the purposes of taxation as follows:

Year.	Number.	Value.	Year.	Number.	Value.
1873	4,869,621	$10,057,081	1887	3,281,224	$4,634,408
1876	6,406,465	8,703,958	1890	2,708,470	3,798,548
1877	6,142,409	4,694,569	1891	2,602,193	4,120,866
1880	5,122,987				

It will be noted that 106,277 fewer sheep in 1891 than in 1890, is valued by the State board of equalization $322,318 higher for purposes of taxation. There is little doubt that the chief cause of rise in values is found in the fact that the consumption of mutton and lamb has in a large degree overtaken production within the State. This has so affected prices that mutton was quoted in early March, 1892, in San Francisco market, at 10 and 11 cents per pound wholesale; while stall-fed beef was quoted at 7 cents per pound. The best estimates obtainable from the trade in San Francisco place the annual slaughter of mutton for that city and suburbs at 751,200 sheep, and 328,650 lambs, making a total of 1,079,850 head. The consumption in the rest of the State is estimated at as many more, though I do not think there is more than half that number used in the country and smaller towns and cities. In many of the former, butchers do not keep mutton at all, because of its great cost as compared with beef. In some of the counties sheep have so diminished in number that they are no longer the common and convenient meat for country use, as they were in the prosperous period of wool-growing, when mutton could be bought at 2½ to 3½ cents per pound in the dressed carcass. From the influence, then, of the high market price for mutton, I conclude that the present consumption of mutton outside of San Francisco and suburban cities is overestimated by one-half, and place the estimated consumption of sheep and lambs at 1,600,000 head, and the aggregate valuation at $5,600,000.

The estimated wool yield of California for 1891, given in the National Wool Manufacturers' Bulletin, is 24,130,015 pounds. My estimate places it at, shorn wool, 18,215,351; pulled wool from slaughtered sheep, 4,133,375; total wool crop of 1891, 22,348,726 pounds. Sold at an average value to producers of 15 cents per pound, $3,352,308.90.

Estimating that 1,100,000 of the sheep and lambs consumed in California were from the flocks of the State, at $3.50 per head, gives $3,850,000 as the value of her mutton and lamb product, making $7,202,308.90 as the annual value of her sheep and wool industry for 1891.

At present, in the central coast counties of California, the attention of those continuing the pursuit is turned to the production of early lambs and mutton. But few of the district fairs held last year in those counties had any sheep exhibited, but such as had showed the interest to be mainly in the English Down breeds. From San Francisco northward, in the coast counties, the Merinos are crossed with the Southdowns and still more with the Shropshires. As a rule no shelter is provided; and most of the uplands, some of which are very rough and broken, would be excellent for sheep ranges if it were not for the dense growths of brushwood (and in some places young timber) steadily encroaching on the clear land. The latter is so closely grazed that there are no longer the dry grasses in the late summer, through which fires formerly ran and kept back the brushwood and timber. This measurable cessation of forest fires and the spread of chaparral growth have resulted in a

decided increase of the coyote and wildcat pests. This district of the State is devoted mainly to the dairy, wine, wool, meats and lumber products; but that portion nearest to the Bay of San Francisco is also used for the production of summer fruits (like peaches) and vegetables. As valuable additions to this report, I insert the carefully kept records of the Baechtel Brothers, of their experiments in cross-breedings. Mr. Baechtel had just published this letter in his local paper, the Ukiah Press, when my inquiry reached him. In reply, he sent me a printed copy as below:

In February, 1873, we made an investment in ten thoroughbred Spanish Merino ewes and one buck. They cost us, delivered on the ranch, $987. The sheep were bred by Jewett, in Missouri, from stock selected from the then famed flocks of Hammond and Atwood, of Vermont. We were unfortunate in the loss of our buck in the following August. We bought a buck, imported by Mason, which cost us $68 more; our whole stock in the autumn of 1873 cost us on ranch $1,055, which formed the base of the flock. We had no experience in sheep husbandry. Bought all the standard works treating on the subject; adopted everything we found practical in them. The conditions under which their experiments were made were entirely different from ours; we in the genial climate of California had not to make much preparation for shelter and food that flockmasters had to make in more rigorous climates. Our sheep are shorn twice each year, while other localities shear but once. We went it blind, as the saying is; wherever we found we had made a mistake we corrected it. We endeavored to breed our sheep up to a high standard in quality and fineness of wool, form, reducing wrinkles, black top and yolk in wool, endeavoring to get as many of these good qualities in our sheep as possible, which future experience taught us a slow and rather uphill business. All stock bred up to a high standard requires constant watching and judicious crossing to improve them. The great tendency is to deterioration. The old proverb of like producing like will not hold good in my experience of advance stock-breeding, from the fact that so many conditions have been used to elevate the standard; many lie dormant and crop out in future crosses. I append a table that is self-explanatory regarding the average prices of wool in Ukiah City, and average wool yield per sheep.

Season.	Sold in Ukiah.	Average wool yield.	Season.	Sold in Ukiah.	Average wool yield.
	Cents.	*Pounds.*		*Cents.*	*Pounds.*
1873 *	30.00	14.00	1880–'81	26.50	9.25
1874 *	30.00	13.23	1881–'82	21.20	10.36
1874–'75	23.38	14.10	1882–'83	19.84	12.52
1875–'76	16.25	13.26	1883–'84	17.56	10.44
1876–'77	23.63	13.07	1884–'85	14.56	9.79
1877–'78	20.00	12.66	1885–'86	16.46	9.80
1878–'79	21.50	10.23	1886–'87	16.85	9.89
1879–'80	25.75	9.77	1887–'88	15.50	9.60

* May 20.

The above table shows great variation in price of wool, and annual average per head. In 1879 we procured an exceptionally free white-yolked Merino buck; we were trying to improve the quality of our wool, as our wool was considered heavy. His progeny gave us lighter fleeces and better quality of wool. We never sold any of our Merino ewes; as they aged, it reduced the general average per head. In 1884–'86 heavy wools got a black eye; prices fell far below other wools.

We adopted the method of weighing each fleece as it was shorn. We procured metal tags numbered from 1 to 12 inclusive; inserted in the ear, we had, as it were, twelve families. We stamped the age of each sheep on them, and the year each lamb came, so we were enabled to credit each sheep in the family with their weight of fleece when shorn. By that method we thought we could ascertain what progress we

were making. It proved a delusive hope; the variable seasons and grass gave us such unequal results that we learned nothing from it. It clearly demonstrated one fact, whenever the growth of wool was arrested by short feed, spoiled feed, rain after grass dried in summer losing its strength, rigorous or inclement weather, all the wool growth lost during such periods of its growth were at the expense of length of staple and weight of fleece. We had no way of finding out what progress we were making in regard to fineness of fiber. In 1883 we addressed a letter to the Commissioner of Agriculture to ascertain who he appointed to examine wool fibers. He referred our letter to William McMurtrie, professor of chemistry in the Illinois Industrial University; that placed us in communication with him. We sent him wool samples in 1883-'84; he reported to us after examination that our wool samples sent him had an average fineness of 1,267 fibers to the lineal inch.

Youatt's measurement of Merino wool fibers.

In England, from Lord Westerman's flock, 1835, lineal inch	750
Manly Miles's measurement of wool fibers from E. Hammond's flock of 8 Merinos, Vermont growth of 1864	1,209
From W. H. Ladds, of Ohio, growth of 1864	1,294
From C. H. Rich, Lapeer, Mich., 1 ram, 1864	1,164
C. H. Rich, Lapeer, Mich., 4 ewes, 1864	1,087
Argentine Republic, 13 rams, 1876	1,265
Australian colonies, 7 rams, 1876	1,260
Our measurements made by McMurtrie, 1884	1,267

From the above comparisons, we have kept abreast of the times in regard to fineness of fibers. In 1888 we closed out our Merino flock after charging every expense against them except feed and care; we had to the credit of our Merino family after paying original investment $2,465.36, in a run of fifteen years with them.

In 1873-'74 we bought 217 thoroughbred Southdown ewes from E. Meek, Alameda County. The orignal stock was imported by J. D. Patterson, of New York, costing us, delivered on the ranch $1,565. This was the base of our grade flock; we crossed them with thoroughbred Spanish Merino bucks. By having those two and pure varieties we were enabled to make crosses with but two types, one to the Merino and the other to the Southdown. I append a table of the results of our crosses; we adopted an earmark for each grade. Before shearing we separated them into their respective grades; each grade of wool was weighed, averaged, and placed to the credit of its class. Our sheep year was from September to September. We adopted that method in order to get our fall lamb clip in their first year's average. We sent samples of our grade wool to Prof. McMurtrie in 1883; he reported in 1885 as follows:

Lineal inch measurement.

Fifteen-sixteenths Merino, one-sixteenth Southdown	1,292
Seven-eighths Merino, one-eighth Southdown	1,316
Three-fourths Merino, one-fourth Southdown	1,320
One-half Merino, one-half Southdown	1,060
Pure Shropshire buck	713
Nine-sixteenths Merino, four-sixteenths Shropshire, three-sixteenths Southdown	1,196
Three-eighths Merino, four-eighths Shropshire, one-eighth Southdown	1,042
Two-eighths Merino, four-eighths Shropshire, two-eighths Southdown	1,077

From the above report our fifteen-sixteenths, seven-eighths, and three-fourths Merinos were finer than our thoroughbred Merinos. Our three-fourths Merinos were the finest.

By referring to the above table you will notice that the first cross between the Merino and Southdown gave us an average gain of 3.38 pounds. The second cross, three-fourths Merino, one-fourth Southdown, gave a gain of 3.36 pounds over the first.

In the fall of 1878 we commenced breeding lighter-fleeced Merino bucks with freer wool, less yolk, and black top. The seven-eighths Merino and fifteen-sixteenths crosses were no gain, rather a loss from the three-fourths, but better wool. It has fully demonstrated the fact. The first two crosses gave the best results, and there is where we should have stopped; after passing the three-fourths cross they became more effeminate, poorer milkers and mothers, lambs more weakly.

In 1881 we bought a thoroughbred Shropshire buck from J. B. Hoyt, of Solano County, used him in the manner the table indicates; his blood gave us larger and more vigorous sheep. Our one-half Merino, one-half Shropshire, gave us larger sheep than Merino and Southdown of the same grade, good mothers and extra milkers. In my judgment, our three-fourths Merino, one-fourth Southdown, and the one-half Merino, one-half Shropshire, were the best sheep we ever bred. My preference is the one-half Merino, one-half Shropshire, as the best all-round sheep we ever bred.

Since 1888 we have been breeding a coarser and larger variety, aiming at about three-eighths Merino, five-eighths Shropshire. Mutton has more largely entered into consumption in our food centers in this State, ruling higher than beef; with our depleted flocks it will continue to. So it now behooves the sheep-grower to produce a sheep that will yield a large carcass, mature early, and as much good free wool as he can get on it.

The one-half Merino, one-half Southdown cross gave us 7.86 pounds. The same Merino and Shropshire gave us five-eighths of a pound more, though the style of breeding was different. The first was Merino buck and Southdown ewe. The second, Merino ewe and Shropshire buck. It is an undisputed fact among intelligent stock-breeders that the female imparts more of her qualities than the male, hence the difference of wool yield.

Table showing results for sixteen years.

	1873.	1873–'74.	1874–'75.	1875–'76.	1876–'77.	1877–'78.	1878–'79.	1879–'80.
Number of days between shearings		368	367	357	366	365	366	366
Number of sheep	16	32	245	409	519	628	514	635
Annual average pounds per head	3.50	5.90	4.60	5.49	6.19	7.11	8.67	7.99
Annual average price in Ukiah	30.00	23.38	16.50	23.63	20.00	21.50	21.10	25.75
Average of Merino buck's fleeces bred		16.38	16.50	17.50	17.00	19.25	16.63	15.00
Number of wethers shorn each year				20	76	112	168	228
Annual average of Southdowns	3.50	5.90	4.60	4.48	4.49	4.50		
One-half Merino, one half Southdown				7.86	7.57	7.81	7.80	6.59
Three-fourths Merino, one-fourth Southdown						11.22	10.36	8.78
Seven-eighths Merino, one-eighth Southdown								11.00
Fifteen-sixteenths Merino, one-sixteenth Southdown								
Three-eighths Merino, one-half Shropshire, one-eighth Southdown								
Nine-sixteenths Merino, four-sixteenths Shropshire, three-sixteenths Southdown								
One-fourth Merino, one-half Shropshire, one-fourth Southdown								
Three-fourths Merino, three-sixteenths Shropshire, one-sixteenth Southdown								
One-half Merino, one-half Shropshire								
Three-fourths Merino, one-fourth Shropshire								
Annual average per cent of lambs			60	84	97	70	90	88

Table showing results for sixteen years—Continued.

	1880–'81.	1881–'82.	1882–'83.	1883–'84.	1884–'85.	1885–'86.	1886–'87.	1887–'88.
Number of days between shearings	373	355	375	356	358	370	364	371
Number of sheep	551	559	584	711	696	417	513	529
Annual average pounds per head	8.74	8.14	8.92	8.02	6.70	7.93	7.93	7.55
Annual average price in Ukiah	26.50	21.10	19.82	17.56	15.50	21.20	20.00	15.50
Average of Merino buck's fleeces bred	14.00	13.00	*14.12	†12.62	‡12.38	‖13.50	§11.50	¶11.25
Number of wethers shorn each year	115	53	10	13	15	18	16	20
Annual average of Southdowns								
One-half Merino, one-half Southdown	6.31	5.81	6.75	5.12				
Three-fourths Merino, one-fourth Southdown	9.12	8.38	8.88	8.22	6.02	9.04		
Seven-eighths Merino, one-eighth Southdown	8.75	9.26	10.05					
Fifteen-sixteenths Merino, one-sixteenth Southdown		10.70	10.97					
Three-eighths Merino, one-half Shropshire, one-eighth Southdown			9.14	8.27	5.75	7.37	6.17	6.28
Nine-sixteenths Merino, four-sixteenths Shropshire, three-sixteenths Southdown				9.44	7.38	8.29	7.79	7.19
One-fourth Merino, one-half Shropshire, one-fourth Southdown				8.63	6.01	7.28	5.90	6.44
Three-fourths Merino, three-sixteenths Shropshire, one-sixteenth Southdown					8.31	7.50	8.44	7.11
One-half Merino, one-half Shropshire					8.49	9.13	10.08	7.98
Three-fourths Merino, one-fourth Shropshire						9.07	9.48	8.37
Annual average per cent of lambs	75	55	90	80	50	83	65	43

*Bred 7 grades, 1 Merino. †Bred 7 grades, 1 Merino. ‡Bred 5 grades, 2 Merino. ‖Bred 5 grades, 2 Merino. §Bred 6 grades, 2 Merino. ¶Bred 6 grades, 2 Merino.

Sheep husbandry has been largely on the decline in our county the last few years. Our great pests are coyotes and other "varmints" in our mountain ranges, and useless curs in our valley and foothill ranges. I am in favor of a general scalp law to eradicate all sheep pests, and a tax on dogs. More attention must be given by flockmasters to their sheep. A large portion of our mountain ranges are adapted to nothing else but sheep-raising. Our grade sheep have been much more profitable than our Merinos were. The Merino bucks bred on ranch were used in our grade crosses. No charge was made against the grade flock for it. If we should have had to supply them from outside sources it would have lessened their profit to the grades, although we sold them for as much as any of our bucks after service; in fact, they were more sought after by outside sheepmen, as they were the cream of our breeding.

Our grade sheep account at the end of 1891.

Has in its favor	$20,874.50
With sheep on hand worth	1,800.00
	22,674.50
Expense fitting ranch for sheep	800.00
	21,874.50
Merino account	2,465.36
Total profit	24,339.86

All expense charged against our grade sheep except feed and care. Our ranch contains 880 acres, about 350 acres bottom land; the balance rolling, some of it timbered.

SAM. S. BAECHTEL.

In answer to later inquiries as the comparative rate of increase between the pure Merino and the cross-bred Merino and Shropshire, the following table shows the results of records kept thirteen years with the Merinos and fourteen years with the grades. It shows an average of 66½ per cent increase from the Merinos and 76 3/14 with the grades.

As sales were made of mutton and lambs at so much per head, a test of comparative growth had not been made, but Mr. Baechtel says: "There evidently is considerable increase in weight. We sell our mutton sheep on foot for 50 cents per head more than our neighbors get for theirs, and our lambs for 25 cents per head more than our neighbors get." The method of management is thus given: "Our way is to have as many sheds as we have separate fields; five mangers in them, and keep hay in them in bad weather. Never confine our sheep. Our best hay is of native grasses of the country. When sheep are in very low condition we feed grain. Barley the best. We sell our wethers and Down ewes from the flock at two years old and upwards. Sold last two years on ranch at $3.25 per head. Our lambs were sold at $2.25 when four months old."

Year.	Merinos.			Year.	Grade ewes.		
	Ewes bred.	Number of lambs.	Per cent of lambs.		Ewes bred.	Number of lambs.	Per cent of lambs.
1873–'74	12	6	50	1874–'75	315	189	60
1874–'75	15	11	73	1875–'76	216	181	84
1875–'76	18	13	72	1876–'77	227	220	97
1876–'77	20	14	70	1877–'78	193	135	70
1877–'78	20	7	28	1878–'79	250	224	90
1878–'79	30	27	90	1879–'80	200	175	88
1879–'80	30	10	30	1880–'81	252	189	75
1880–'81	32	23	72	1881–'82	314	173	55
1881–'82	32	26	70	1882–'83	340	306	90
1882–'83	40	34	80	1883–'84	359	287	80
1883–'84	36	30	80	1884–'85	436	218	50
1884–'85	10	8	80	1885–'86	230	191	83
1885–'86	10	7	70	1886–'87	300	205	68
				1887–'88	323	139	43
Average increase for 13 years			66 7/13	Average increase for 14 years			76 3/14

It will be observed that the table shows the fall of one year and spring of another. Bred in the fall; lambs the following spring.

It is in these northern coast counties that the climate in summer and winter enables the sheep to live on the pasturage throughout the year. And provision of either feed or shelter are the exception rather than the rule. The chief exceptions are those who breed the best stock. Of such visited by the writer, the farm, barns, and fencing of Mr. H. Meacham, of Petaluma, is deemed worthy of description. The estate consists of 5,000 acres of fine rolling land; the soil a sandy loam originally covered with wild oats, but now covered with fine short pasturage. In each

pasture is a long, roomy hay barn, so constructed by recesses into the inside of the bays containing the hay as to increase the feeding room. The sheep are allowed access to the hay by thrusting their heads through racks made wide enough for the purpose. The shed room is sufficient to allow all the sheep in that particular pasture to find shelter in inclement weather. They are left ample space to pass out or in under the sills of the building, which are about 2 feet from the ground at each end and along one side, so that the sheep need not suffer by being crowded too closely nor by piling in fright. With a view to keeping out dogs and coyotes the field is fenced with split redwood pickets 5 feet long, 1½ inches thick, and 3 to 4 inches wide, driven into the ground at the lower end about 2 inches apart, spaced the same distance apart at top and woven into strands of wire by the machine made for the purpose. At intervals of 10 feet a post is set securely, standing 5 feet out of the ground, and to these posts the wires sustaining the pickets are secured by staples. A barbed wire is stretched 8 inches above the top of the pickets to make it dog proof, and another is stretched 2 feet from the ground to make it bull proof. Either a dog or coyote getting into the field has an experience which deters future attempts. They are generally found seeking an easy way to get out. Two greyhounds are kept for the purpose of finishing them when necessary. The catch on this farm during the year 1891 was eighteen dogs and ten coyotes, and eight eagles were shot. The necessity for and the value of these arrangements to catch and kill the enemies of the sheepfold will be understood from the statement that the estate is devoted to the breeding of Red Polled cattle, polled Merino and Shropshire sheep. Fifty ewes of the latter breed had recently been added to the flock by importation at a cost of $50 per head, when the writer was there, in January, 1892. The importer is ready at all times to give $10 for killing a coyote on his land.

A born pioneer (and, like J. B. Hoyt, of Suisun, Jothan Bixby, of Riverside, and Samuel Baechtel, a believer in Shropshire-Merino cross), Mr. Meachem is leading the way to meet the pressing demand for mutton and more lambs as indicated by the quotations in the market reports of their principal city, San Francisco. At this date (March 19, 1892) stall-fed beef (dressed carcass) is quoted at 7 cents and mutton at 10 and 11 cents per pound. The coast counties of California, north of San Francisco, constitute the portion of the State best fitted by nature for the successful crossing of the Merino with the British breeds. It is in this district of the State where the greatest amount of such crossing has been done with the most encouraging results, and consequently where the call for sheep of the Southdown and Shropshire breeds is most pressing. The demand for them is seemingly much greater than for Leicesters, Cotswolds, or any of the long-wooled breeds. All over northwestern California complaint is made of the ravages of the coyote (or small wolf), the wildcat and the eagle ranking next. The

prowling domestic dog is also a nuisance everywhere, but most so where land is subdivided among small holders. The increase of these predatory animals is assisted by the continual extension of chaparral and young forest growth down from the hills and mountains into the valleys. The State gives a bounty of $5 a head for killing the coyote, which is increased to $25 by local associations in some portions of this district. Still the pest seems to increase, as does the injury it inflicts upon flock-owners from year to year, until within this entire district (the best for wool-growing within the State) 50 per cent increase on the ewes bred is the highest estimate on a general average, and in some localities it is much less than that.*

Many of the wool growers in this portion of the State own the mountain or hill land they range their sheep on, and in some cases they use fire upon their own lands in order to check the increase of the brushwood growth and burn out the predatory animals. But this is done with great care to prevent the spread of the fire. It is in the northern portion of this district that the most valuable full staple wools of California, called "California northern" in market reports, are produced, and the summer feed in their production is largely the leaves and young shoots of aromatic brushwoods on the mountains, which even the summer ranging of the sheep does not prevent from slowly spreading downward to lands which were clear of timber and brush forty years ago. This land was then kept clear by the frequent running of fires in the grass, which dried into hay where it grew. This was once an important agency of the natives, who by the aid of circles of fires were enabled to kill large game at close range with the bow and arrow, and capture immense numbers of grasshoppers, which they used for food. This use of fire, of course, stopped whenever and wherever the grazing stock of the white man ate the grass while it was green. The same causes are operative all along the foothills of the Sierras. On the western slopes of these mountains, from thirty to forty years ago, wherever a stream debouched to the plain, mining was carried on; the timber was cut off for use from a varying width of 5 to 10 miles. Grazing began with mining and has continued ever since. Yet in that period a jungle of brushwood and young timber has grown up where large timber growth then stood, and is now a dense cover and breeding ground for the coyote, cougar, and wildcat, into which flock-owners would not think of turning sheep. Roads are cut through this undergrowth to reach the timber belt above for fuel and lumber, and through these the flock-owners pass their flocks to reach the summer grazing lands of the Sierras above and beyond the timber belts of the range. It is from the débris of lumbering operations there carried on that the fires most destructive to forests have in recent years generally emanated. From these thickets grown on the timber tracts cut

*The State treasurer has settled with the counties for nine months' claim under the scalp law by the payment of $102,000.

off by the miners of long ago the coyote issues to the plains below, following the streams which are still fringed by belts of brushwood. From them he issues to kill sheep, pigs, chickens, and turkeys, in numbers which keep him at the head of the predatory destroyers of live stock.

From this belt of old placer mining operations a fringe of brush and young timber growth has extended in some cases many miles down toward the plains below, in spite of the close grazing of animals. The proof of this fact can be seen from the car windows on the Central Pacific Railroad between the towns of Auburn and Rocklin, where the railroad company had the young pine and other growth cut off this year. This growth, which has come up within twenty-five years, adds greatly to the cost of getting the land into condition for fruit culture, now the engrossing business in the locality. These facts prove the absurdity of the charge that sheep devour young forest growth. This charge is regarded by all of my correspondents who graze sheep in the Sierras as false and absurd as the charge that they or the herders burn the ranges they feed their flocks on.

The outcry that has been kept up against sheep pasturing on the Sierra Nevadas was first raised by persons interested in cattle and horse grazing, who always and everywhere object to sharing the advantages of grazing the public domain with flock-owners. Their objections are based on the fact that the cattle can not be held on range closely pastured by sheep and will not thrive on range that supports sheep well. One of the most cautious men I have met in California, who has made a fortune with sheep and never takes his flocks to these mountains (but who owns 2,000 acres of sugar-pine land upon them and 5,000 acres on the plains below), and is embarking his capital in a large enterprise of constructing a reservoir in one of those mountain valleys to save the winter flow of water for summer irrigation, tells me that the "outcry against sheep ranging on these mountains is the result of selfish prejudice." That "sheep do not feed in the timber belt, but above it;" that "an outbreak of fire from a sheep herder's carelessness would be a good cause for his dismissal" by the flock-owner. That in fact such an occurrence is very rare, and that the most injurious fires in the forests originate where lumber-making is carried on, and from careless campers on hunting or fishing excursions.

John Muir, the fearless explorer and fine descriptive writer of the grand and beautiful scenery of these mountains and solitudes, went into the Kings River, Yosemite, this season of 1891, to see what destruction had taken place in the sixteen years since he first saw the valley. The sawmills used in cutting up the "big trees" into lumber "had doubled in number and more than doubled in capacity." But, although he would evidently rather see a bear than a sheep in his solitary travels, he only notes "a young sapling scarred by a camper or herder" while crediting the latter as a class with "undoubtedly

killing a great number of bears in the aggregate during the year." He thinks it is "a pity that such good-natured animals, which are so much a part of these shaggy wilds, should be exterminated."* Against this pity for bears may be set the evidence elicited in a lawsuit brought primarily to test the question of injury done by sheep grazing in the mountains. The suit was against a county for demanding a license for sheep passing out of one county into another, for purposes of summer grazing on mountain lands owned by the flock-owners. This is one of the laws of California, inimical to sheep industry, which is to-day helping to raise the price of dressed mutton to 11 cents per pound, where once it abounded at 2½ to 3½ cents per pound.

The following extract from a letter by a member of the sheep-breeding and wool-growing firm of Kirkpatrick & Whitacre supplies information on this point from business experience and personal observation, which is supported by every one of very many communications received:

We have had our sheep in the mountains for many years, and our Mr. Whitacre has been with them every summer and can give you all the facts from personal observation. Some two years ago we had litigation with the county of Tuolumne on the license issue, and had subpœnaed about a dozen of the most prominent sheepmen now in this part of the State. The county had all the cattlemen there that could be reached, and the question of forest fires was thoroughly ventilated.

It was shown that the principal range for sheep was above the timber line, that what feed there was in the timber belt that sheep would eat was "deer brush," "bull brush," and other shrubs that never grow into trees; that they did not eat the young pines; and that it would kill them if they did. Furthermore, it did great damage to the mountain range to be burnt over and that every owner of sheep was very solicitous in urging caution on his herders to prevent fires. That they were caused mostly by camping tourists and Indians who set fires to drive game out of the brush.

Three years ago we had on the forks of the Stanislaus one of the greatest fires ever known in the mountains. It was burning for weeks. The next summer I was all over our range on the middle fork of the Stanislaus, and did not see one tree that had been killed by the fire. A good many dead trees had been consumed and the underbrush had been burned out, but I do not think one green tree had been injured. The fire destroyed all our corrals, cabins, fences, etc., doing us damage to the extent of hundreds of dollars, besides burning the range. If you have been in the mountains that are timbered you will know that the ground is covered with the fallen leaves of pine and fir to a considerable depth. When a fire runs over this the leaves of course burn, and every green thing that sheep might nibble at is consumed. The whole surface of the ground seems to burn, leaving nothing but a bed of ashes, which produces almost nothing for years afterward.

Another charge is made, that when the brush is destroyed by the sheep the sun melts the snows sooner and were it not for this the waters would be held back later in the season for irrigating purposes. But the facts are, that the spring floods occur now just as they did and at the same time as before any sheep were taken to the mountains. The timber belt with the underbrush that sheep feed on is so low down that the snows are melted by the warm sun of May and June, and the streams are fed in the latter months by the snows that lie in altitudes higher than the timber belt. Beyond a doubt it is to the interest of sheepmen going to the mountains to

*See Century Magazine, November, 1891, p. 90.

prevent fires, and every mountain man—unless he is a cattle owner—will tell you that they do no damage to the forests. Indeed the forests are encroaching on the ranges more and more, instead of being destroyed by the vandal sheepmen. All the old settlers of Sonora, Tuolumne County, say that when they came to the country there were no trees about the town of Sonora. Now the pines grow away down this side of that town. In Humboldt County where sheep have run for thirty years in a timbered country, the trees are growing in places where there was not a sign of a tree when the white men first went in there, although sheep have been running over the ground during the entire period.

My personal observations along the foothills of the Sierra Nevada and in the mountains of Oregon accord with the foregoing. In the Willamette Valley, in western Oregon, there is more timber to-day which has grown up during the forty-five years since fires ceased to run in the grass, as it did formerly when dried up and sometimes into the timber lands, than there was when the white man and his grazing stock first arrived there. And this notwithstanding the lands have been constantly grazed by horses, cattle, and sheep, and very large sums have been expended in chopping off, burning, and grubbing up the brushwood and young forest growth to preserve the pasturage or clear land for wheat-growing.

The foregoing extracts are from a letter of one whose location is near the center of the great plain of California. The following is from one located farther north on the east side of the Sacramento Valley. The same averments as to the case of sheepmen in regard to setting fires, and its effect against their interest when set, are made by correspondents from all the different points along the base of the Sierra Nevadas. Mr. Mariner's letter contains some other points of value. The same is true of Mr. Baechtel's, which describes conditions in the coast counties of southwestern Oregon as well as northwestern California, where the firebrand sometimes is used, followed by grass seeds, as forerunners of sheep and cattle.

Mr. Mariner's letter is dated Sheridan, Cal., February 28, 1892, and is as follows:

Yours of the 9th instant received, and should from its importance to the sheep industry have been answered sooner but for lack of time. In reply to your first question as to the income and outlay on my flock for the year, they are about as follows:

One herder, per year	$300
Shearing, sacking wool, and board of shearers (that is shearing twice)	320
One extra man in mountains, wages and board four months	190
Rent of range	150
Extra men on road to and from mountain range	50
Expenses for incidentals	20
Total	1,030
Receipts from sale of wool and mutton	4,648

Making the net receipts over expenses about $2.25 per head. This does not include interest on lands of my own, as that has increased in value more than enough to pay a good interest on the original investment.

Your second question, as to excluding grazing stock from the mountains, is one of great importance to the live-stock industry of the Pacific coast. Whenever sheep

are kept out of the mountain ranges the industry for the States of California, Nevada, and Oregon is irretrievably ruined, as it is impossible to make it pay if sheep are kept in the hot valleys on dry feed in the summer. I know that from experience in California. What harm sheep do the forests I never could see, and after years of experience in the mountains I believe that they are a benefit instead of a detriment. The argument that the sheepmen burn over the ranges is not tenable, as nothing is more detrimental to their ranges than to have a fire sweep over them. I will venture the assertion, without fear of successful contradiction, that there are not as careful men about fire in the mountains during the summer as the sheepmen. Those advocating their exclusion are ignorant of the facts in the case, and, I am sorry to say, most of the war waged against them has originated in my State.

In moving to and from the mountains is where sheepmen and their stock suffer most. We thoroughly doctor our sheep about the 1st of May, and then do our best to get sheep and dogs in condition to start about the 10th or 15th. In taking a flock of 2,500 or 3,000 we use two extra men, one to help the two herders drive and another to drive wagon and attend to camp. We always take a wagon as far as possible and then discard it and use pack animals the rest of the way. The trip up and down is a hard one on sheep, and there is but little feed for long distances in the foothills. In furnishing our sheep camps we have supplies hauled by wagon as far as possible, and pack from that into camp. As to keeping different bands of sheep from mixing, that is the herder's business. He knows his bounds and aims to respect his neighbor's rights; but in case some of his sheep should escape and get among his neighbor's, they are corralled, separated, and driven to his own flock. Each aims to respect the other's rights.

Third. The no-fence law, where the land is used for grain and fruit raising as well as grazing, works well, and I believe that it is right; if I have stock I should be compelled to take care of them and keep them from trespassing on my neighbor. However, in the mountains, fencing is not practicable, as the snows of winter will destroy even a barbed wire fence. So the only resort there is to herd. I am a strong advocate of the State bounty law for the destruction of enemies to sheep. The scalp law, on coyotes alone, is now costing the State of California about $160,000 per annum. I can hardly see the necessity for a scab law, for it seems to me that any man who saw fit to put his capital in sheep would take interest enough in the development of that capital to keep the scab out of his flock if possible. It is, however, an utter impossibility to entirely eradicate it in the warm climate of California. It is not, however, as troublesome on the alkali plains of Nevada. A tax on dogs, I think, should be laid so heavy as to cause the extermination of all worthless curs in the State. They are sometimes more destructive than wild animals. My neighbor within two weeks has had sixty head of fine breeding ewes destroyed by two dogs that no one will claim. Tax dogs by all means; it will work no hardship on the general public, and do away with many dogs that are a perpetual nuisance to our neighbors.

Fourth. The policy of withdrawing the mountainous portions of the several Western States from sale and entry would be one of the best things that could be done if the idea of forest preservation is to be carried out. If rented to stockmen they would have an interest in preserving the timber. But I fear the time has passed for that in California, as there is hardly a township of land in the mountains that has not one or two locations upon it. These would destroy its value as a range unless the parties could be bought off. Had the idea been acted on twenty years ago it would have been an excellent one; and in certain sections it would still be practicable. Referring again to the exclusion of sheep from the mountain ranges, if such a thing should ever be done, we must dispose of our flocks and get out of the business, as we could not keep them in the hot, dry lowlands during the summer months and produce a wool that would be of any use for manufacturing purposes.

Yours truly,

J. S. MARINER.

Mr. Baechtel's letter is dated Willits, Mendocino County, Cal., February 17, 1892, and is as follows:

Your letter of February 8 was duly received. My answer is as follows:

First. "Did you charge anything against your flock or sheep for the use of land?" No, we did not, from the fact that we did not know how to get at it. Mountain ranges have been secured by parties holding them at a cost rating from $3.50 to $5 per acre. Sheepmen estimate that it requires, on an average, about 2 acres to maintain a sheep. A great deal of the land is unfit for anything; but in entering up a block of that land the bad has to be taken with the good.

That class of land has not appreciated since it has been secured by sheepmen; if anything, it has gone the other way. You can to-day, in our county, buy that class of range land from $2.50 to $3.50 per acre. Sheepmen owning range and sheep have been leasing them from $1 to 75 cents per sheep. At expiration of lease the lessor is to make the number of sheep good. Parties owning range and sheep pay the tax on them. A great many of our range men have been doing little more than holding their old stock good for the last few years, owing to bad seasons and increase of coyotes and other "varmints" that prey upon them. Our lands in the valleys and rolling lands in the foothills have appreciated. Our valley lands are appraised at $30 per acre; rolling land from $7 to $10. Our valley land is estimated to maintain a sheep on less than an acre; our rolling land, a sheep to 1¼ acres. Our wool grown in the valleys is no better that on our hill ranges. With same grade of sheep our valley increase is greater, as you will observe by the table I sent you, consequently I think the cost of maintaining a sheep on our hill ranges should apply to our valley sheep in proportion to the amount of land used per sheep, without reference to its appreciated value. Appreciation has been brought about by home-seekers in our valleys. During the period embraced in my former letter our nearest railroad depot was Cloverdale, Sonoma County, 50 miles distant. We could not haul any of our farm products to that market, therefore we turned our attention to the cheapest and most profitable manner of utilizing our lands.

Second. "A class who blame sheep and sheep-herders for all forest destruction, by fires, etc., wish to establish a law to prevent grazing on them." Sheep and sheepmen are considered on uninclosed ranges the vagabonds of the earth by a large class of our people, and are driven from pillar to post. It is an occupation that is just as honorable as any other pursuit in life. A great many things are charged to sheepmen that they are entirely innocent of. Hunters camping around through the mountains are the ones that do the most of the indiscriminate burning. What interest is it to a sheepman to burn up all his range? Sheepmen on our mountain ranges sometimes burn out a portion of their range* where it is so thick with underbrush that nothing can well get through it. They are careful not to let the fire get out from it on any other portion of their range. It prevents "varmints" from harboring in them. The following year the young shoots that spring up from the roots are choice morsels. Those burnt districts are more frequented than any other portion of the range; they afford green food where other portions of the range are dry undergrowth, the bane of all mountain ranges. Although sheep will eat more different kinds of grasses and herbs than any other domestic animals, they leave many untouched, which the fire scavenger must cleanse. I am of the opinion that burning a portion of sheep ranges is no disadvantage to them if conducted with judgment, and no law should be enacted to hamper a man in the pursuit of cleansing his own property.

Our rainfall for the last ten years has been a little above 47 inches in that time. We have had many indiscriminate fires, coming principally from the west. About

*It must be understood that this practice is pursued, if at all, in a climate and under conditions very different from those existing in the Sierra Nevada range, east of the plains of central and southern California.

6 miles west of the valley is the top of the watershed of this valley, dividing coast waters from Eel River waters. It is the eastern belt of redwoods, about 20 miles wide. Lumbermen get logs and railroad ties for the coast, then start fires to burn up the refuse bark, broken timber, and underbrush. They pay no attentian to it; let it run eastward, burning all the latter part of the summer, destroying much valuable timber. Such fires are more destructive than any in our high mountain ranges ever could be. And there has been no perceptible want of moisture in our locality for the last ten years. All portions of California occupied by Indians before white settlers came among them were denuded every year by fire. No perceptible evil sprang from it.

Respectfully yours,

SAM S. BAECHTEL.

As we proceed southward from Sacramento City the mountain-range question becomes more important to the sheep and wool industry, for the reason given by Mr. Mariner. The heat and drought and dust of the plains in summer are not the only obstacles to sheep husbandry, for the culture of wheat, barley, and fruit occupies the plains wherever it is possible to irrigate with present means or crops can be secured without irrigation. As the law does not require the fencing of lands cultivated, sheep are generally removed from the plains while crops are growing, and kept off them until the grain and grape harvests are gathered; then they are brought from the mountains to glean the fields and vineyards. This proposition, then, to withdraw these mountain ranges from use as pasture lands, under the name of national parks, simply means almost total destruction to the sheep industry of California and great injury to the cattle-raising interest. In 1891 a troop of United States cavalry devoted their summer outing to harrassing sheep-herders and driving cattlemen off the forty-two townships declared to be a national park, surrounding the Yosemite and given to the State of California. This action has prompted a recent associated movement to protest against its repetition and against additicnal withdrawals as destructive to important industrial interests and without reasonable justification. To these ends a public meeting was held at Fresno on March 22, which was participated in by men who in times past, as cattle and sheep owners, had practical knowledge of the subject, and many of them now have their interests in plain lands. Joseph D. Collins, who presided as chairman, is so situated. In calling the meeting to order he reviewed the situation at length, and stated facts bearing on the question which ought to secure conservative action in dealing with such a vital interest. He said:

At the outset I desire to inform my hearers that my material interests do not consist of stock, but of 1,400 acres of level land in this valley that is assessed at fully $40,000. Consequently, as I have only about $3,000 worth of sheep, if I believed for one moment that the sheep industry was antagonistic to the fullest development of our system of irrigation I would most assuredly get rid of my little band of them. But the sheepmen are not interfering with a single industry in Fresno County; are not diminishing our water supply or destroying the timber. In the first place, the persons who got up this scare about the sheep land had no practical information on the subject. If they had been well informed they would have known that trees, grass, and shrubbery do not prevent snow from melting, but have a contrary effect.

He concluded his remarks by saying:

One reason why I am opposed to this scheme is that if carried out it will drive one of the most important industries out of Fresno County. The sheep, cattle, and stock industry brings nearly $1,000,000 into our county every year, and no man can foretell the disastrous effects of its eradication.

He was followed in much the same strain by seven other speakers, sheep and cattle owners of past years, now largely owners of plain lands, and interested in irrigation. The point of Mr. Collins' objection is emphasized by the fact that while Fresno County in 1880 was reported as containing 750,000 sheep, the assessment rolls of 1891 give only 378,621 of all kinds and ages. Even with the diminished number it is still the richest county in sheep on the Pacific coast. And whereas the laborer of Fresno in 1880 could eat mutton at 2½ to 5 cents per pound, that kind of meat retailed at Fresno in November, 1891, at 15 cents per pound. From this it can be seen that the virtual destruction of the sheep interests of Fresno, by keeping up what all men having practical knowledge on the subject declare to be a causeless scare and unfounded prejudice, inflicts an injury to that county and to the entire State. If the delusion spreads it will soon be transmitted to other States having high mountain ranges and lands requiring irrigation.

In so far as a wise forecast would preserve timber growth for future use, no public-spirited citizen will object to a settled Government policy. Such a policy ought to be adopted in California with the least possible delay. The rapid filling up of the plains with inhabitants and subdivision of them into smaller ownerships wherever irrigation water can be obtained points unerringly to the safety and permanency of investments in means to supply water and the certain enhancement in value of accessible timber land. Capital accumulated by past success in sheep husbandry is already being invested in irrigating ditches, reservoirs to retain the winter flow of water for summer use, in mills to saw up the mountain pine, and flumes in which to float the lumber to the towns and cities of the plains and to conduct the water for irrigation purposes. Capital is combining for these purposes, and is also purchasing timber lands on these mountains, and if Government is to act in the matter for the sake of coming generations no time should be lost. But if the statements unanimously made to me by correspondents who claim personal knowledge as to the influence of sheep-grazing in these mountain ranges be true (and my own observation and experience support them), then keeping sheep off increases the danger of forest fires.

The necessity of the grazing lands of the Sierra Nevada to the animal industry of California is such at present that the action of Capt. Wood's troop in driving sheep and cattle from the district which has supported "about 90,000 sheep and 2,000 cattle through twenty-seven summer seasons prior to 1891," will in all probability result in the destruction of double the number of sheep and cattle during 1892. Men will retire from that line of labor rather than contend with such an

agency acting under orders from the Secretary of the Interior. They will fatten and sell their stock rather than maintain a contention of that kind, and their retirement will give opportunity to a class of land speculators already too numerous and too busy for the best interests of the animal industries of the State. The industry of this class of men in seeking for investments on the western slopes of the Sierras facing the great plains is shown by the following letter to the American Sheep-Breeder:

> The wool-growers in this section have been organized in a secret society for about one year under the name of the California and Nevada Wool-growers' Association, its object being mutual protection and the education necessary to their interests and success.
>
> Much labor has been done to protect their interest in the right to the use of the large body of public lands in this country, which through fraudulent schemes are being transferred to the State as lien lands for the sixteenth and thirty-sixth sections—transferred to the State for school purposes.
>
> The officers of the General Government have been notified through this organization by a petition to withhold their approval of these selections, which are being made by a ring of land speculators in such a manner as to deprive any person who desires to become a settler from doing so, by locating all springs and water courses, thereby controlling thousands of acres surrounding these locations.
>
> Generally these selections are made by the land grabbers who never pay for the lands thus obtained, the State only requiring a payment of 20 per cent or 25 cents per acre thereon, the balance standing indefinitely at 7 per cent interest.
>
> The individual could do nothing to oppose this great land-grabbing scheme, therefore this organization was formed for this and for such other purposes as would best conduce to the interests of the wool-grower.
>
> This organization will be pleased to correspond with any other similar one for mutual benefit, or with any persons desirous of organizing one.
>
> D. HAYS,
> *Secretary California and Nevada Wool-growers' Association.*

It is doubtless for grazing purposes that those lands on the eastern slopes are sought. On the western slopes the timber tracts most convenient of access chiefly invite capital. The means which have been used and will be used to attain legal ownership of all land of that kind prospectively valuable are hardly worth an allusion. There is every reason to believe that perjury is one of the professions of a certain class of squatters on these mountain lands, and it is the statements of such men, given to newspaper correspondents who are venturesome enough to penetrate the elevated ranges in the company of United States troops, that are set before the public in opposition to the statements of the oldest and most respected industrial pioneers of the State to prove that sheep-owners (whose every interest is opposed to firing the ranges on these mountains) are the "Huns of California," who ought to be driven from the land and kept from it by a permanent patrol of dragoons. Such recommendation was made by Allen Kelly, who, claiming to be acting for the California State Forestry Commission, published his findings and recommendations in the San Francisco Examiner of January 19, 1892. On the other side are submitted letters of men who have

thus far pursued successfully this important industry in opposition to prejudice, perjury, and lawlessness. Mr. George Champlin, of Red Bluff, Tehama County, Cal., writes as follows:

I keep 18,000 grade Spanish Merinos, giving an average of 9 pounds of wool each at two shearings, selling at an average of 15 cents per pound. Get 75 per cent increase on the ewes, bred at a cost of about $1 for all charges except for use of land. My sheep are kept from early fall to some time in January on some 30,000 acres of grain stubble and 4,000 acres of vineyard, eating the leaves and cleaning the vineyard and killing and destroying all insects and disease, saving a large expense of plowing and cleaning up. They are turned loose, with two or three men to look after them. I dip with lime and sulphur, costing half a cent a head, and pay 5 cents per head for fall shearing, and 6 cents in spring. Land values too complicated.

I would like to say a few words in regard to the prejudice against sheep and about the hue and cry that a band of sheep traveling over a country are as bad as a fire. The law unfortunately is against sheep; while sheep have to be kept on land bought or Government land, cattle and horses are permitted to run at large. I drive my sheep over 100 miles to the mountains, and I take all the pains possible to keep my men from firing the country, for when a fire does get out, particularly in the fall when the leaves are dead and dry, it destroys quantities of feed, burning up the browsing which is our richest feed. If there are no fires lighted and the sheep are fed over a country, they prevent fires from running by eating up the leaves and the vegetation that would burn. There is a very strong prejudice against sheep, some wanting large damage if sheep are even permitted to look at land, but by fair treatment we are wearing that off, and hope to see the time when this will be gone.

Respectfully yours,

GEORGE CHAMPLIN.

The following letter from Mr. G. C. McCoy will be found of much interest:

I usually winter about 3,000 sheep. They shear about 3 pounds in the fall and 4 pounds in the spring. I mark about 65 per cent of lambs of the ewes bred. It costs me about $1 a head to run my sheep, exclusive of the interest on the land investment. I run a sheep ranch for wool and mutton. You ask what are the disadvantages. None but prejudice of people who know nothing about the business, and in some cases it is jealousy. I herd the year around; pay $25 a month and furnish the camp. Cost of the shearing, 5 cents per head in the spring and 6 cents in the fall. It costs me about 1 cent a head to dip, which I do spring and fall. My ranch is worth $20,000. The prices I sold wool for are as follows:

Fall clip.	Cents.	Spring clip.	Cents.
October 11, 1878	13	May 6, 1879	20
14, 1879	20	25, 1880	30
1, 1880	16	25, 1881	22
16, 1881	15	10, 1882	26¼
15, 1882	12½	29, 1883	21¼
16, 1883	11½	23, 1884	17½
10, 1884	9	4, 1885	17¼
2, 1885	16½	—, 1886	18½
17, 1886	14½	7, 1887	20
20, 1887	8½	15, 1888	12½
10, 1888	12½	15, 1889	19
16, 1889	11½	15, 1890	21
4, 1890	13½	12, 1891	20
8, 1891	11		

Those are my sales in Red Bluff for cash on delivery. I shear in the spring here on the ranch, 10 miles from town, drive them 100 miles and summer on the summit of

the Sierra Nevada mountains, where the snow falls some winters 10 or 12 feet deep and mashes my fencing to the ground.

I wish to say a few words about the wool interest. The objections to the business arise mostly from the cattlemen and horsemen who oppose our buying up the land, for while it belonged to the Government and the railroad company they used it, paid no tax on it, and in the mountains they run their stock on our deeded land the same as we do. As for sheep being hard on feed, my ranges are as good now as they were eighteen years ago when I first saw them, and in the valley it is better. Some say we burn the ranges. This is a mistake, as the brush is our best feed, and if we burn it some of the best never comes again. I tell my men never to start a fire where it can spread, and if they see a fire on the range go at once and put it out. The worst of the fires start from hunters who are short of bedding and make a fire by a big log in order to keep warm, then go off in the morning, and it will spread. Sometimes they set fire to brush to run out a bear or other game.

Yours, etc.,

G. C. McCoy.

Such letters can be multiplied by the hundred, from men scattered along the Sierras from Mount Shasta to San Bernardino, who have in years past and up to this date contributed vastly to the wealth of the nation. Their rich products were gathered from the plains and mountains of California, leaving the land richer for future use. They are therefore certainly more deserving of credence than the squatter who is holding a claim to sell at the first opportunity, or he who locates upon the range, indifferent as to whether it is private property or public domain.

From Fresno southward a large proportion of the sheep and wool industry is in the hands of a foreign element called Basques. As a class they are described by their intelligent countrymen as "very ignorant about anything except their special calling, few of them being able to read or write in their own language, and, in connection with their business, suspicious, secretive, and determined to avoid giving out any information, which they would assume, in spite of anything which might be said, was intended to be used against them for purposes of taxation." From an agent of the great stock-raising and slaughtering firm of Miller & Lux I received the following outline of their methods: They usually begin by associating in quartets, working for wages. When by industry and extreme frugality the four have accumulated a sufficient sum to purchase 250 ewes the investment is made and the sheep are taken in charge by two of the four, the others continuing to work for wages, all working and saving to increase the flock. A few years generally bring the combined interest up to a point admitting of subdivision; sometimes this is into halves, and sometimes each of the four begins as an independent proprietor. The owner continues with his flock and hires an assistant when needed, generally at $20 per month, where Americans pay $30 per month. They hire pasturage only when they must, and are very close dealers when they do. They are exceedingly adroit at getting every bit of free pasturage, and do not, according to my informant, always confine themselves to what is free to all.

There is no fence law in California, the law requiring owners of live stock to take care of it. This leaves many a fine homestead exposed to night marauders in search of grass, and it has occurred that such a homestead has been invaded and grazed bare while the owner slept, and when the next day, exasperated and armed, he tracked the marauding flock 8 or 10 miles from the scene of the mischief, he found the party in charge of the flock pretending to be utterly ignorant of the cause of complaint—as my informant said, "regular know-nothings." One case is reported as resulting fatally to the transgressor the past summer. The American claimed that the Basque was repeatedly told he was herding on private property and warned off. The offense was repeated and the herder was shot. In another case it was reported that the Basque attempted to play the bully and was killed as a consequence. It is but fair to state that a very intelligent countryman of these men (who has acted as their agent in marketing over 1,000,000 pounds of wool and in the purchase of over 3,000 improved rams for them during the past season) holds that these killings were simply deliberate murder. Be that as it may, this foreign element has at the present time got the outranges of southern California so filled with sheep that should a dry winter season occur there will be great loss. Though they might be willing to buy feed—which they will not do so long as it is possible to avoid it—the feed is not there to sell. They, like the Americans who have more sheep than their lands will carry, have to depend largely on hiring stubbles for fall and winter pastures and on grazing the mountain ranges in the summer. On the one hand, the rapid extension of fruit farming is lessening the wheat lands; on the other, a Government policy of employing soldiers during the summer months to prevent the grazing of the national reserves in the supposed interest of forest preservation will have a very injurious effect on the business of this class of men. Few of these attempt to become citizens, and when they do, it is generally with a view to acquiring range rights by taking up homesteads, which they sell with their flock when they conclude to realize and go back to their own country.

As a class, they occupy the same relation to English-speaking men engaged in sheep-raising that Chinese laborers held to white laborers on this coast before they were excluded by law. These people keep good sheep, preferring a cross between the French and Spanish Merino, a majority of their American neighbors doing the same. They also keep them more clean and free from scab than Americans, and yet do not dip as the latter do twice a year. Their method is by what is here called "patching;" that is, local applications, when a sheep shows any sign of the disease. Their value as customers for pasture lands is recognized by the land agents of the Southern Pacific Railroad Company, who advertise their leasings, dates, and places in French, Portuguese, and English.

But although the American sheep-owner in this extensive district, so largely overrun by these active, economical, and expert rivals for public range, may almost be said to have abandoned the pursuit, there are still a few who maintain themselves. Some of the Americans have stocked with sheep five islands lying off the coast of Santa Barbara, and are assessed in that county. The largest of these is owned by an individual named Moore, of whom it may be said he is probably the sheep king of California. Although receiving no information from him, I have reason to believe he had 48,000 sheep shorn last spring, and as 30,000 lambs would be in ratio with the increase of flocks on the neighboring island of Santa Cruz, this would bring the number of all ages to 78,000 at last spring's shearing. The estimate given by old resident flock-owners on the mainland is that Mr. Moore has about 75,000 on the island of Santa Rosa. The Santa Cruz Company have 30,000, giving an increase of 20,000. The sheep are not herded, but allowed to feed at will, seeking the natural shelter of the oak and pine trees. The shearing takes place in April and October of each year. The spring clip of 4¼ pounds average sells at 17 cents, and the fall clip of 4 pounds at 13 cents per pound. The sheep are Spanish Merino. Hay and alfalfa are raised to feed in case of scanty pasturage. Few are sold as lambs, but when so sold the price ranges from $1.40 to $1.60 per head. The greater part of the sheep are sold at the age of three years, the prices ranging from $2.50 to $2.75 per head, delivered at the company's wharf on the island.

The coast counties of southern California are where sheep husbandry first began with such extraordinary success under American methods. But it has now greatly declined under the influence of the popular mania for fruit culture, though the great increase of population which is induced by climatic conditions to seek residence here would naturally make the breeding of lambs for market a profitable branch of sheep husbandry. It may be expected that in such a county as Ventura (where, in 1891, but one American is found as a flock-owner, so completely has the business passed into the hands of Basques and Portuguese) the Americans will lead the way in improved methods to meet the wants of the public for early lambs and well-fed mutton. This has already begun in Los Angeles County by Jotham Bixby, one of its oldest pioneer wool-growers, and others will surely follow. Such a special line of breeding and feeding will here be founded on the alfalfa crop. From four to six cuttings, or 6 to 10 tons of cured hay, can be made annually from such land as now used under irrigation to grow 2 to 4 tons of grapes per acre, which, delivered at railroad stations in first-rate condition, sold to dealers at $6 to $8 per ton this season. Already may be seen on California farms fig and orange trees, bearing crops of unsalable, because superfluous, fruits, used as shade trees for cattle and sheep.

In all the inland counties of California the Merino sheep as yet finds no competitor for general adaptation. There is a very general effort amongst wool-growers as well as breeders to maintain as large size as the nature of the climate and character of the range pasturage will permit. So far as experience yet indicates, the Merino, improved by American breeding skill, will continue to be as generally the sheep for all the Pacific slope interior to the coast mountains of California as it has been for the past thirty years. Cross-breeding with early-matur ing British breeds, now begun in the coast counties, will increase in those localities, but the dry plains and high mountains inland from the line of British Columbia, to and including New Mexico, are as permanently adapted to the Merino sheep as are the inland plains and mountains of Australia. And the same enduring conditions—climate and natural forage plants—insure a larger income in shorter time from sheep than is possible to be derived from cattle under any human care and skill. Public and private interests, therefore, point to a future development, in all this vast extent of arid land, of a sheep husbandry which shall be permanently supported and assured by irrigation in producing alfalfa and other crops, to carry stock through periods of summer droughts and winter storms, as is now done by the most successful flock owners of California, eastern Oregon, and Washington. The present and gradually increasing cost of meats is causing renewed interest in sheep husbandry. Local causes in California and western Oregon are diverting public attention away from sheep husbandry to grain and fruit farming. But in the eastern portions of all three of the Pacific Coast States water for irrigation purposes is as important a factor of success in sheep husbandry as in any other branch of industry. The industry has heretofore been pursued mainly upon the public domain and often under bitter local strife with rivals interested in horses and cattle, and sometimes with bona fide settlers under the homestead law. It needs the proper recognition of public law and a secure tenure of range rights both in the mountains and on the plains, obtained either by purchase at low rates or by lease on nominal terms, similar to the methods pursued in Australia. There are yet opportunities for investments in lands on the foothills in California which might be used for many years to come as bases for sheep husbandry with reasonable probability of a steady rise in the value of the land. But the day of such great appreciation as is indicated in the history of the Lompoc ranch under Hollister & Co., and in the letter of J. P. Whitney, on preceding pages, is past. Still there are thousands of situations west of the summit of the Rocky Mountains in California, Oregon, and Washington, wherein a man enfeebled by miasmatic diseases in the Mississippi Valley, or tired with the routine and strain of mercantile pursuits, would find a new lease of life and an occupation not devoid of interest by engaging in sheep husbandry.

OREGON AND WASHINGTON.

The first domesticated sheep were brought to Oregon from California in 1843 by the Oregon settlers, who went there to purchase cattle. The event is known in the early history of Oregon as "the second cattle drive" from California. The Oregonians, on arrival in California, in 1842, found there Jacob P. Lease owning sheep, and pursuaded him he would find a market for them at good prices if he would drive them to Oregon. This he did by joining the party and driving with them.

There has been some doubt, until within a few years, whether Mr. Lease brought his sheep to Oregon with the first cattle drive in 1837, or with the second in 1842–'43. It has also been in question as to the number brought. There seems no longer reason to question that the only time Mr. Lease was in Oregon was in 1843. The late J. W. Nesmith, who filled many positions of honor, among them that of United States Senator, came to Oregon in 1843 and passed the succeeding winter of 1843–'44 with Capt. Gale, the leader of the second cattle drive. In the course of an address to the Oregon Pioneer Association, he said:

> In the spring of 1843 they started to Oregon with a party of forty-two men who brought with them an aggregate of 1,250 head of cattle, 600 head of mares, colts, horses, and mules, and 3,000 sheep. They were seventy-five days in reaching the Willamette Valley. On their arrival with their herds the monopoly in stock cattle came to an end in the Willamette Valley.

As this last sentence is not likely to be understood by any but the oldest of the pioneers of Oregon, I think it proper here to explain that the first domestic cattle in Oregon were owned by the Hudson Bay Company. When Dr. John McLoughlin took charge of that company's affairs as chief factor in the Columbia Valley, and moved its chief post from Astoria up to Vancouver, on the north bank of the Columbia, in 1825, the cattle numbered 27 head of all sorts and ages. In 1829 he began the policy of loaning two cows each, and steers for teams, to the retiring Canadian servants of the company, whom he advised to settle in the country. He did the same with the American settlers and missionaries. He advanced one-third of the money used to buy cattle when the first company of American settlers and missionaries was formed to go to California for cattle in 1837, yet he continued to lend cattle to needy settlers until 1843. Except the killing of a calf or two annually to get rennet for cheese making, he permitted no cattle to be killed for the use of himself, his officers, or employés until 1838, when the first beef was killed for use at Vancouver, and in 1839 he refused to supply the British squadron under Capt. Edward Belcher with beef, for which the captain complained of him on his return to England. It is probable Dr. McLoughlin could not sell cattle without disobeying the London directory of the Hudson Bay Company, but by this system of loans, in addition to the loans of seed and bread grain, and giving out implements, tools, and clothing on credit, he nourished the first settlements of Oregon into existence, during years when the pro-British portion of

his officers were frequently almost in mutiny against his self-denying policy. Oregon will erect a monument to his memory some day.

In 1844 a small flock was driven across the plains and mountains from the Missouri River to the Willamette by Joshua Shaw and son. In 1847 over 100 were driven by a Mr. Fields. In 1848 Joseph Watts drove 330, including grade Saxon Merinos, 7 pure-bloods, and 6 high-grade Spanish Merinos. Of the "Lease" sheep the largest part were purchased by officers of the Hudson Bay Company (who had formed the Puget Sound Agricultural Company) and taken to the north side of the Columbia River (now the State of Washington) as a means of strengthening the British claim to the north bank of that river, the question of the Oregon boundary being yet unsettled. The next largest purchasers of the "Lease" sheep were the Catholic missionaries, who let them out mostly in small bands to the Canadian French settlers, members of their church. Some of the American settlers also got a few of these sheep by purchase.

The Mr. Fields, before mentioned, died soon after his arrival in Oregon, and his little flock was sold by the administrator in small lots, so that it became the foundation of many flocks. Sheep were eagerly desired as necessary to meet the needs of domestic manufacture of clothing. In 1851 Hiram Smith brought to Oregon some pure-blood Merino rams from Ohio. In 1858 Martin Jesse brought to Oregon McArthur's Australian Merinos—part of a shipment made from Sydney, New South Wales. They were certified as being pure descendants of Spanish Merino flocks of King George III of England, and drawn from the Kew farm flock of the King by Capt. John McArthur, father of the McArthur brothers, who sold them to J. H. Williams, United States consul at Sydney, New South Wales, for shipment to California. Early in 1860 R. J. Jones and S. B. Rockwell brought into and sold in Oregon pure-blood American Merinos and French Merinos from Addison County, Vt.* Jewett and Lane brought in the same

*In connection with this importation I wish to say that the certificate of sale of these sheep came into possession of the writer in 1860, by purchase of a half interest in ten head of pure Merinos, consisting of one French Merino ram and one ewe of the same family, two ewes of American Merinos of the Vermont type, and six McArthur Australians. As there is not known to be now in existence, I understand, a paper tracing back to any particular flock or "cabaña" of Spain, this certificate traces to the Negretti cabaña, if we accept as correct the history of King George III's acquisition as given on page 241 of the Report of the Bureau of Animal Industry for 1889-'90. I kept the ewes in question in western Oregon till they died of old age, and watched others owned by other breeders, and have no doubt that the McArthur Australians can be bred to produce as fine fiber in most of the arid land districts of the United States as in the interior of Australia. Oregonians bred the Australians to American Merino rams because the latter were a larger sheep, and gave fleeces of double the weight of wool and nearly as fine. The cross increased the weight rapidly. The first three ewe lambs of this cross were sold to a neighbor, Hon. T. L. Davidson, who bred towards the American Merino, and who, sixteen years after the cross began, sent samples as part of the Oregon State exhibit at the American Cen-

year French Merinos. J. Cogswell imported New Oxfordshires and Hampshire Downs. Southdowns, New Leicesters, and Merinos had been returned to Oregon in 1854 by Dr. W. F. Tolmie, who, as manager of the flock, had used them to improve the Lease sheep. In 1858 R. C. Geer imported Jonas Webb Southdowns from England. Ex-United States Senator Ben Stark imported a pure-blood Cotswold. In 1864 John D. Patterson brought in some of the largest class of French Merinos. About this same date (1864) sheep of the popular British breeds began to arrive from the various Australian colonies and from Canada, since which time the flock owners of Oregon have had ample variety of the best herds to choose from.

Oregon is sharply divided by the Cascade range of mountains into two diverse climates. Western Oregon may be described as mild and moist, yet has its wet and dry seasons—the wet or damp, from October to April; the dry, from April to October. The following averages of temperature and precipitation are the result of ten years of observation made at Eola, near Salem, and probably give us as near the average for western Oregon as can be taken from any single point:

Seasonal temperature.—Mean annual, 50.9°; spring, March to May, 50.2°; summer, June to August, 62.9°; autumn, September to November, 50.8°; winter, December to February, 38.8°.

Precipitation—Average of ten years.—Total annual inches, 40.70; spring, March to May, 9.87; summer, June to August, 2.03; autumn, September to November, 10.56; winter, December to February, 17.41.

The temperature and amount of precipitation are closely similar to middle England, except that Oregon has by far the best ripening and harvest seasons. Yet the temperature is so nearly similar that all kinds of English domestic animals find congenial homes in Oregon, and the British breeds of sheep can all be kept here as well as the different families of Merinos.

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tennial Exhibition of 1876, for which a first-class medal was awarded for the following reasons given by the committee on awards: "Some very fine specimens of Merino wool of fine fiber and good staple, very much resembling Australian wool, and giving evidence that Oregon can produce wool of very great value." The story is that King George III expressed his thanks to the Marchioness del Campo di Alange for her courteous gift of a small and choice flock of Negrettis by presenting her with "a present of eight splendid coach horses." To show that the poor home-builders of Oregon could give a royal recognition of this valuable breed of sheep, a copy of the bill of sale of the Vermont and French families is here inserted:

March 31, 1860. We have this day sold to Joseph Holman and J. L. Parrish:

One French Merino buck, $500	$500
Four breeding ewes, at $275 each	1,100
Two young ewes (not in lamb) at $100	100
	1,700

Received payment in cash and notes.

R. J. JONES and S. B. ROCKWELL.

These sheep, it will be understood, were not more than average specimens of the respective families. Much higher prices were paid subsequently for fancy animals.

From the commencement of the improvement of sheep for wool-growing purposes in Oregon the Merino blood has been used to a greater extent than that of all other breeds combined. This is true of western as well as of eastern Oregon in past years. At present mutton has advanced in price in all the chief markets of the Pacific coast, and, as a consequence, farmers of western Oregon who have faith in the future and know the value of sheep to their grain farms are using the English breeds deemed best for mutton and wool production. Other causes in addition to tariff agitation are working against sheep husbandry, the chief being the subdivision of land ownership near towns and cities for orchards and market gardening. This, however, is local.

By the United States Census of 1880 the number of sheep in Oregon was..	1,033,162
By the Oregon State census of 1885 the number of sheep in Oregon was..	1,694,153
Increase in five years	660,991
By the assessment rolls of 1891 sheep number	1,159,822
Decrease in six years	534,331

I am glad to be able to say this loss to Oregon of more than a half million of sheep instead of a gain of 750,000, which should have taken place in the last period of six years, has not been all lost to the nation. When Oregon sheep husbandry was at its lowest state of depression, Lanteman Brothers, of Dakota, made a purchase of 20,000 ewes in northeastern Oregon and drove them to Dakota. They published a yield of 10 pounds per fleece the succeeding year in Dakota. The trade has enlarged every year since, and in the spring of this year (1891) it was estimated that 500,000 would be required. On June 1, 145 carloads of 200 each had been shipped from Pendleton alone to Mandan, N. Dak., and many buyers were yet seeking sheep to purchase. It is impossible to tell the exact number of sheep so deported from Oregon, either as stock sheep for the Dakotas and Montana, or as feeders for Nebraska and Kansas, or as mutton for the Puget Sound, Chicago, or California markets, as large numbers are driven out of the State.

Owing to this increased and brisk demand for stock-sheep by the farmers of the Dakotas, the prices advanced this year in northeastern Oregon to a higher rate than such sheep have sold for since 1883. The prices ruling for sheep, by the flock, are $2 to $2.25 per head, lambs counted. Wethers also have advanced from $1.50 to $1.75 for yearlings and $2 for two-year-olds, in 1890 to $2 to $2.50 for yearlings and $2.75 for mixed ewes and two-year-old wethers, and $3 for two-year-old wethers delivered immediately after shearing. These are "range sheep prices" for 1891. In western Oregon, near the large markets, the advance has been even greater. Mutton sold to wholesale butchers in Portland, Oregon, in April and May, at $5.15 to $5.25 per 100 pounds, live weight, and thrifty January and February lambs at $2.25 and $2.50 per head. Prices at Puget Sound cities and Victoria were 50 to 75 cents higher per 100 pounds. Prices from farmers' hands ranged from $4 per head for lambs ten to eleven months old to $6 and $7 for three and four year old

wethers of the larger breeds. Ordinary graded wethers ranged from $4.50 to $2.50 per head, according to quality, distance from and convenience to market, etc.

The decrease of sheep on this entire coast has so enhanced the price of mutton that those who have clung to their flocks through the agitations of the tariff question since 1883 are now beginning to reap the reward of their perseverance in an advance on their mutton and stock sheep as an offset to a slight decline in wool. My estimate is that mutton consumed in the two States of Oregon and Washington and exported to British Columbia aggregates 375,375 head, at an average value of $3 per head, worth $1,132,125. The stock and mutton sheep deported to Dakota, Montana, Nebraska, and the Chicago and California markets is estimated to aggregate 445,522 head, valued at $1,113,805, making the total value of mutton and stock sheep sold in 1891 $2,245,930. Estimating the advance on prices from 1890 to 1891 at 25 per cent the increased income is, from enhanced prices, $561,432. Estimating one-half the deported sheep as wethers, 222,761 head, at an average of $3 per head, gives for mutton deported $668,283. For mutton consumed in Oregon, Washington, and British Columbia, as above, $1,132,125, making the total income from mutton $1,800,408. Twenty-five per cent advance from 1890 to 1891, gives increased income from mutton alone, $450,102.

The assessment rolls of 1890 give 903,714, to which I estimate an increase of 225,428 not assessed, making 1,129,142, the number of sheep shorn in eastern Oregon.

	Pounds.
Estimated average fleece of unwashed wool, 7 pounds, aggregating..	7,903,994
The 256,744 head in western Oregon, yielding 6 pounds, average.....	1,540,644
The 227,066 head in east Washington, yielding 7 pounds, average....	1,589,462
The 25,753 head in west Washington, yielding 6 pounds, average.....	154,518
Total shown in both States 1,638,735 head, yielding.....	11,188,618
At average price of 17 cents per pound, valued at.....	$1,902,065.06
Total value of mutton and stock sheep as above.....	2,245,930.00
Total for wool, mutton, and stock sheep.....	4,147,995.06

In view of the steady decrease of sheep in western Oregon and the still more rapid appreciation of mutton values, farmers who keep sheep are seeking to improve the mutton-making qualities of their flocks, for which purpose crosses with the British breeds are used. The Cotswold and Shropshire Downs seem to be preferred. The advance in this direction is led by grain farmers nearest the markets. Except in the case of breeders of pure-blooded sheep few farmers in western Oregon make an exclusive business of sheep-husbandry. All, except it may be some settlers on rough, cheap lands near the mountains, keep sheep as aids to clean grain-farming. For that purpose a very successful man esteems 200 sheep on a 300-acre grain farm as equivalent to the labor

of a hired man and team during the summer season, the sheep paying to the owner about as much as the owner would have to pay the hired man and keep of the team.

There is great diversity of methods. I will give, as illustration, that of the owner of a 200-acre grain farm near Salem. He keeps 75 to 125 head. His arrangements for their care are, roomy barn set on the south side of a lot 1 acre or more in extent, the most of which is thickly occupied by mixed oak and fir trees. Into this barnyard the sheep are brought every night in the winter season. The barn doors are left open and whenever it is probable the sheep will eat hay, it is placed in the racks. It is rare that a lamb yeaned during the night is not found in the barn with its dam in the morning. A door from the south end of the barn opens into a lot of some 4 acres, always sown early to winter wheat, which is perhaps the very best pasturage for suckling ewes. Thus, with the least possible outlay of labor, the man saves about 100 per cent of lambs from the ewes bred. He prefers a cross of the Cotswold and Merino, the latter blood predominating, giving a carcass at one year old of 100 pounds live weight, and a fleece of 9 to 9½ pounds of long, light, combing wool, selling at 22 cents in the grease. His last year's lambs sold at $4 when eleven months old. He deems all he gets from his sheep clear gain, as their services as scavengers during summer are worth more than their winter cost for keep.

Seventy-five ewes, at $4 per head	$300.00
Interest, at 10 per cent	30.00
Two hundred pounds of salt	1.60
Shearing, at 7 cents per head	5.25
Total outlay	336.85

Cr.

By 712 pounds wool, at 22 cents	156.64
By 39 eleven-months-old lambs, at $4 per head	156.00
Total income	312.64

Taking this man's estimate of the value of these sheep on his farm, they yield him $4.16 each annually. In my judgment he could keep 300 head of the same kind of sheep on the same farm, and at the same prices for wool and mutton get a return of $3 per head, and not materially diminish the grain product of the farm, but probably increase it. This, however, would involve the hire of a first-class man, whose duty it would be to watch over the sheep as to feed, shelter, and all that would insure their welfare. The case given is one of actual results attained this season of 1891.

The measure of returns from sheep, as a rule, diminishes as one recedes from the chief markets, until the rough lands surrounding the valley of the Willamette are reached. There sheep are kept in some cases as aids to clear the land of fern and other coarse growths, but more

often because they can live and return some income with little care or experience. In districts remote from the market, like Douglas and Jackson counties, both by nature fine pastoral districts, sheep husbandry is rapidly diminishing under the causes already named and the increased development of fruit-raising as a chief pursuit. The assessment rolls of 1891 show a decrease of sheep in Jackson County from 24,791 in 1885 to 6,956 in 1891. The same causes, and, in addition, the increase of the coyote pest and negligent ignoring of the scab law, have reduced the number of sheep kept in Douglas County from 109,443 in 1885 to 42,024 in 1891. The decrease in western Oregon during the same period has been from 385,566 in 1885 to 135,754 in 1891. The revival of interest in the industry is most manifest near the local markets for mutton, in western Oregon and in the arid land districts of eastern Oregon, where wool and mutton production is a special pursuit.

East of the Cascade range in Oregon and Washington lies the arid land district of both the States, in which sheep-raising and wool-growing are conducted under an American modification of the method which was pursued with the traveling flocks in Spain prior to its invasion by the first Napoleon. The American improved Spanish Merino sheep is the breed most used. The industry, however, is not defended by special local laws nor in the interest of a special class. The very poorest men may, and often do, enter the business with their labor only, by undertaking to care for a flock purchased by the capital of others. Contracts of this kind are generally for a term of years, under conditions intended to secure a fair division of the income from the flocks between the owner and the lessee. It is the general practice to winter their flocks on the lower plains and in the sheltered valleys through which the smaller streams cut their way to the rivers. The narrow strips of interval land of these valleys (or canyons, as they are often called) are depended on to furnish winter forage in case it is found necessary to feed. The flocks are generally kept on the winter range until the lambs are marked and the sheep are shorn. Both of these operations are usually finished during the month of May, the lowest and best-sheltered ranges being the earliest.

As the country fills up with settlers and available lands for homesteads are taken (and they are nearly all taken now, especially along the water courses), the system of renting flocks is changing in favor of the homestead settler, the ownership of the land controlling water places being an important consideration as a means of securing the benefit of feeding on the public lands in the vicinity. As settlement for this purpose extends, the freedom and advantages of grazing on the public domain are diminished and the trouble and expense of keeping sheep in this manner increase from year to year. The pasturing capacity of these public lands is also steadily decreased by overstocking. Every keeper of stock, of whatever kind, is trying to get

what unassisted nature produces, while none are willing to manage with a view to preserving and maintaining the value of the range. The increasing trouble and cost of keeping sheep in eastern Oregon and Washington, consequent upon homesteading and other means of obtaining ownership of the public lands, is pressing sheep husbandry back from the lines of railroads and from districts suitable for grain production. From this cause sheep are most easily purchased in northeastern Oregon for stocking the ranges of Montana and the Dakotas. Those inclined to cling to their wool-growing pursuit move southward in eastern Oregon or west across the Columbia River into Washington. There they meet with strong opposition from the cattle and horse grazing interests, because the larger animals can not live on ranges which will support sheep very well. Cattle, especially, will not stay on a close-fed sheep range if they can get to other ground. This is the reason why the pioneers of these different grazing interests are always opposed to each other as two against one. In the counties where the range is not yet fully occupied with sheep, the sheep-owners—there in advance—quite naturally oppose the coming in of others, especially flocks invading their counties from other counties.

These troubles about ranging stock upon the public lands increase in number and variety as the country becomes fully stocked. Another element of disturbance is the presence of foreigners in the range country (generally with sheep), who are there only to gather wealth and go away with it. This evil is not as great in Oregon as it was ten years ago, and not nearly as bad as it is now in southern California; but still it helps to give emphasis to the desire for some plan for disposing of the vast amount of arid lands, which can not possibly be reached by irrigation, to those who will use it for grazing purposes. For twelve years past the writer has been of the opinion that every interest, national, State, and local, requires that these arid pasture lands should be secured to those who will use them for pasturage purposes on merely nominal terms, whether by lease similar to the Australian method, by sale, or by grant in such quantities as would enable a man of average industry to support a family from their use. The peace and permanency of wool-growing, as the pursuit to which these lands are best adapted, requires that means to secure private control should be adopted as soon as possible. The stimulus of individual interest will have to be called into activity before the depreciation of these lands can be checked. Twelve years ago the wool-growers of the Columbia River Valley gave no heed to a suggestion of private ownership of range. Now almost everyone assents to the proposition. The suggestion applies to the high mountains as well as the dry plains.

Hon. E. B. Gambee, of Umatilla County, writes, under date of June 6, 1891, a letter, of which the following is an extract:

As you are aware, there are vast areas of mountain lands that are totally unfit for homes, and only suited for grazing purposes during the summer months. These

ranges are overstocked to such an extent that the grass is being killed out very rapidly. A large per cent of the stock is owned by men who have no interest in the country devastated by their stock, but, as you are aware, live 50 to 100 miles away, and drive their stock to the mountains for summer range, to the injury of those who are trying to build up homes in the mountain valleys. Another class own nothing but their stock, and camp wherever they can find water and feed. It seems to me that one of two things should be done: These mountain ranges should either be sold at a nominal sum (say 10 cents per acre) or leased for a long term of years at, say, 1 cent per acre. Settlers owning adjacent lands should have the first preference as purchasers or tenants. The purchaser or tenant should be limited in the amount of land he could acquire, both distance and the amount of agricultural land already possessed being taken into consideration. The number of domesticated animals that perish every year is appalling, if the whole truth were known. It would be better for all concerned if the stockmen were compelled either to own the ranges or rent them. If the overpasturing of the mountain ranges continues ten years longer they will be nearly or quite denuded of grass. Something must be done, and that promptly.

Mr. Henry Hahn, Prineeville, Crook County, Oregon, sends me the following statement:

In compliance with your request concerning the sheep industry of eastern Oregon, regarding the merits and demerits from a financial point of view, I wish to state that I keep from 15,000 to 20,000, according to season, one-half to five-eighths Merino. They yield about 7 pounds of wool per season; average price for last three years, 17 cents per pound. The proportion of lambs raised from ewes bred is about 70 to 75 per cent, according to season. The estimated cost of running sheep per head per year is from 75 to 85 cents, according to season, if sound and healthy; 85 cents to $1, according to season, if scabby. I raise sheep for both wool and mutton. In feeding I use wild meadow hay, oats and wheat, rye and alfalfa.

The principal disadvantage in raising sheep here consists in the ownership of the ranges by the Government, which causes great strife among the stockmen, and thereby tends to injure the stock interests by lessening the profits and threatening the permanency of vast live-stock industries which consist principally of small herds. Another important disadvantage caused by our present range system is the spreading of diseases among all kinds of stock, and more especially scab among sheep, which causes a very large item of expense to sheep-growers who are compelled to range their stock. The greatest freedom of action in ranging sheep is desirable in the winter, and is conducive of the best results. In matter of shelter, open low sheds or wind-breaks have proven most advantageous. In matter of feed, wild meadow hay and alfalfa have given the best results.

In conclusion, I wish to say the foregoing views are the result of ten years' observation and personal experience, and I am fully convinced that the best interests of the live-stock industries in our dry range country would be greatly promoted if the stock-growers could purchase or lease from the Government the lands now used by them, for the following reasons: Under purchase or lease these lands would be fenced. The stock turned into these pastures by reason of unrestricted liberty would do much better, grow larger, and in sheep would grow 20 per cent more wool and of a better quality and much cleaner. It would do away with the present contention and strife between the stockmen and farmers, and the ranges would be capable of sustaining one-third more stock than can be ranged upon them under the present destructive system, and would give the live-stock industry a permanency and stability which it can not hope to attain under our present system. It would also minimize the present notion of overstocking.

From the increased and increasing difficulties of running sheep upon

lands that many desire to use and which nobody owns, it is now often necessary to have additional help to move a flock from their winter to a summer range. The owner of the flock, in most cases, makes one of the party. The packer takes the lead and keeps a sharp lookout against colliding with some other flock. In a case of large numbers by one owner, there is still another man who is specially employed to examine the country for range; to find, if he can, a district in which he can place all the sheep in flocks of convenient size, joining each other on the range. He may be regarded as the guide to the packer, who is supposed to locate and purvey for two camps or flocks. In case the flock is limited to two bands, the packer (who in that case is frequently the owner) takes special care to see in what direction and at what distance sheep of other owners are located, so as to avoid mixing. He will see that the herder's camp is supplied with everything that is necessary. The herder meantime is with his sheep all day and every day. His best skill is brought into play to let his flock feed over fresh ground every day in the most leisurely manner consistent with preventing any from getting permanently separated from the main flock and so lost. This is called "loose herding," and more often consists of restraining the active and strong than in driving the weak. Where feed is plenty a flock will soon settle down to regular feeding habits. Up in the morning with the sun, they feed till 9 or 10 o'clock a.m., then rest and shade until 3 or 4 o'clock p.m. They then feed toward camp, arriving there just after the sun is down. The herder then commences preparations for his supper, doing all he can toward his breakfast and lunch next day, not forgetting his friend and helper, the dog. In the morning he is up with the dawn. He makes his coffee and fries his meat, and generally has finished his breakfast, fed his dog, and put up his lunch when the sun strikes his sheep, and they begin to repeat the process of the day before. The routine of his daily life is varied a little when he has to move to a new camp, which it is the packer's duty to locate and guide him to. Should the flock be a division of a larger flock, an occasional visit from the range hunter is expected, and arrangements for future movements are made with the packer. This range hunter may be regarded as the American substitute for the "mayoral" under the old Spanish method. He is invariably an American, a good mountaineer, and a dead shot. The best herders are also Americans, and generally have aspirations to become flock-owners or something else they prefer. The wealthiest men now in the business are Americans, many of whom started as herders for themselves or others. A large proportion of the herders are of foreign birth. They are mostly satisfied with the life, and spend their wages, after a long time out with the sheep, much like "Jack ashore" after a long voyage. Some, however, are thrifty and saving and make good citizens.

The flock-owner of moderate means, who runs 1,500 to 3,000, if he live within 50 or 60 miles of his summer range, is generally his own packer,

visits his flock with supplies and for oversight once in ten days or two weeks. He thrives according to his fitness for practical management.

The portions of eastern Oregon and Washington which will admit of an increase of sheep under present methods are those which are now preëminent for wool of the least shrinkage and best quality. Several efforts have been made to improve the wool crop of the district with crosses of other blood than Merino, but in every case those who experimented have returned to the Merino after the second year. I think it is safe, therefore, to say that eastern Oregon is most suitable for the Merino as a breed, and its highest lands are suitable to the production of the finest staple wools of that breed and of the best quality.

Wool is the first object with the range flock master and mutton second. The high-grade Merino is very generally preferred for both purposes under this system and upon these dry ranges. The wool will grade from half-blood up to full-blood French Merino, and 8 pounds per fleece is given as an average, the rates increasing as the flocks are wintered on the low sandy plains, and lessening as they are kept on the highest lands, but greatly improving in quality. Prices range from 12½ cents to 19 cents per pound. Methods of management vary greatly with the differences of locality. I transcribe the method of A. M. Kelsey, of Antelope, Wasco County, as a good average illustration:

Beginning June 5, the lambs, 900 in number, from a flock of 1,000 ewes, have been marked and docked before shearing, which is just finished. The flock is ready to be started to its mountain range for the summer, provided it is sound and free from scab, concerning which the shearing affords ample opportunity to learn. Should it be affected in the least degree, the first thing to be done after shearing is to dip. Of the various preparations for that purpose a mixture of lime and sulphur is considered the most effective, and immediately after the sheep have been shorn is the best time, because, first, the composition reaches the parasites most easily and effectually; second, the wool being harvested, the injury to the fleece from the use of lime and sulphur is reduced to a minimum. The dipping process is effected by swimming the sheep slowly through a trough 40 feet long and 5 feet deep, filled with a blood-warm preparation of 15 pounds of sulphur and 30 pounds of lime to 90 gallons of water, well mixed by boiling together before putting in the vat. This process is usually repeated after an interval of fourteen to eighteen days, when, if the work has been thorough, the flock will be clean. The cost of this process, labor included, is 2 cents per head for each dipping. Some flock-owners dip as a precaution against infection in passing to the mountains, and also dip their rams before commencing the breeding season.

For the management of this flock of 1,900 ewes and lambs, during the summer months from May 25 to October 10, two men and three horses, at a cost of $100 per month, including wages, board and equipage, are

required. When returned to the winter range the lambs are separated from the ewes for the breeding season, the lambs not being bred until their second year. The rams used are mostly thoroughbred Merinos, at an average cost of $15 per head. Ten rams are used for a flock of 1,000 ewes. These rams are put on grain feed of about 1½ pounds of oats per day, with all of the hay they will eat, for a period of thirty-five to forty days. The rams are turned in with the ewes during the night and taken out in the morning. Some owners put in a portion of the rams one night and another portion another night, alternately. The best informed breeders deem it still better economy to put in all the rams on alternate nights only. After the breeding season, the lambs which have been during that time under the care of a separate herder, are put back with the ewes until the snow falls, when they are again taken out for feeding. About 1 ton of hay is allowed per day as feed for 1,000 ewes; and a feeding season of at least twenty days is expected during the winter. The winter over the lambing season begins. The first preparation for that is a corral or yard tightly boarded up all round a space of 100 feet square, with a shed roof extending 16 to 18 feet toward the inside, leaving the central space open. The shed is divided into compartments, each suitable for the comfort of 100 ewes, in order that the flock can be drawn out in the morning with as little crowding as possible, so that lambs yeaned during the night may be segregated with their mothers without confusion. It is becoming a common practice to have an extra man during the night to take out each ewe and her young, as they come, and place them in a separate pen or stall until morning. Five men are deemed necessary to conduct a successful lambing, at a cost of $40 per month per man, besides board, which will add $5 per man. At the end of eighteen days, one man may be dispensed with. Besides the shed, it is necessary to build eight to twelve covered pens 12 feet square, at different places on the range, to shelter newly dropped lambs, should the weather be wet or stormy. One extra man accompanies the flock for this purpose. The lambs should be kept in small flocks of 75 to 100 until at least 6 days old, and when 500 ewes have lambs of that age or more, they should be moved off the lambing ground until the lambs have recovered from marking and castration. Unless the weather be very inclement, the latter operation should be performed within two weeks after they are segragated from the main flock. After these operations, which close the lambing season, the flock may be put under one herder until shearing. The shearers go in parties of from eight to twelve (ten is most common), and these sometimes shear an average of 100 sheep per man per day. Seven cents per head is the usual price, to which board and other necessary expenses add three cents more, making a total of 10 cents per head. Wool sacks and twine cost this year 53 cents per sack, which contains an average of 40 fleeces.

The following account with flock of 1,000 ewes, by A. M. Kelsey, of Antelope, Wasco County, Oregon, gives results from a flock deemed rather less than the number giving the most profit:

Bought in June, 1890, 1,500 stock sheep, 1,000 ewes, 500 lambs (mixed, ewes and wethers), at $2.50 per head all around	$3,750.00
June, 1890, provisions and outfit for mountains	100.00
Three horses	75.00
One herder, 12 months, at $40	480.00
One camp tender, 4 months, at $40	160.00
Ten thoroughbred bucks for use of band, at $15	150.00
Hay and grain for bucks, 6 months	20.00
Board of herder, 8 months	64.00
Hay for winter feeding, 30 tons, at $10	300.00
Shearing 1,500, at 6 cents	90.00
Wool sacks, 41, at 48 cents	19.68
Twine for tying wool	3.00
Board, ten men shearing 1½ days, at 75 cents	11.25
Three extra men in shearing, 1 day, at $1.50	4.50
Three extra men in lambing, 1 month, at $40	120.00
Board three extra men, lambing, 1 month, at $8	24.00
Freight on 14,000 pounds wool, 65 miles, at 75 cents per 100	105.00
Interest on capital invested in land, etc., $3,000, at 10 per cent	300.00
	5,776.43
Average loss during year, 5 per cent, 75 head, at $2.50	188.00
	5,964.43

The above does not include expenses on wool after reaching warehouse.

Sold in June, 1891, 430 yearlings, at $2.50	$1,075.00
Sold in July, 14,000 pounds wool, at 17 cents	2,380.00
Raised in 1891, 850 lambs at $2.25	1,912.50
Remainder of old stock, 995, at $2.50	2,487.50
	7,855.00
Expenditures	5,964.43
Profit	1,890.57
Interest on money invested in sheep, $3,750, at 10 per cent	375.00
Balance	1,515.57

The following statement was made to me by an acquaintance who left western Oregon, and going to eastern Oregon started with sheep in a small way, but in a very favorable situation. His location is on Cherry Creek, in the northeastern portion of Crook County, and contiguous to the western spurs of the Blue Mountains. By separate investments he purchased two quarter sections of what is called canyon bottom land, the very best for alfalfa. For one he paid $1,000 and for the other $800. They control the water of the creek for 2 miles. These lands he seeded to alfalfa. Last year he sold hay from them to the amount of $1,500, besides supplying his own wants for a flock of 3,800 sheep, with other stock necessary to conduct such a wool-growing plant. He will make this season 300 tons of alfalfa hay, needing for his own

stock at most 160 tons. Hay is customarily sold at $10 per ton. To harvest it costs him $1.50 per ton for labor. These 3,800 sheep are managed by 2 herders and 1 packer, with 4 horses for their use, the cost, including everything, being $50 per man per month—

Making per annum	$1,800
Six men at lambing	300
Shearing 3,800 sheep (including sacks, twine, and board), at 10 cents	380
Hauling wool to market	313
160 tons of hay, at cost	240
Total cost	3,033

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By 31,350 pounds of wool, at 16 cents	$5,016
By 1,000 two-year-old wethers and dry ewes, at $2.75	2,750
By 80 per cent of lambs from 2,600 ewes, 2,080, at $2.00	4,160
By 140 tons surplus hay above needs, held at $10 per ton	1,400
	13,326
Total cost	3,033
Net income	10,293

I took the foregoing data from the lips of A. J. Shrum, at the town of Mitchell, Crook County, Oregon, July 23, 1891. Mr. Shrum made his statement in round numbers and very deliberately; as he keeps no accounts they may not be exact, but I have no reason to question their close approximation to the truth. It will be noted that the annual cost of maintenance lacks but a small fraction of 80 cents per head, and many letters I have received give 50 cents per head as the cost of keeping sound sheep. But in Mr. Shrum's case his judicious investment in land is a source of additional income instead of a charge against his flock, and his success is attributable to many favoring circumstances; the most important of these are, first, his well sheltered and warm winter range; second, the nearness (not 50 miles) of excellent summer range; third, and above all, plenty of alfalfa hay for winter. I heard of his success as a wool-grower at a long distance from his locality. Naturally and properly Mr. Shrum is inducting his sons into his chosen pursuit, and the family now own lands controlling 9 miles of the creek upon which the two hay farms mentioned are located. This gives them the grazing of the lands adjoining this length of the stream to such an extent that they call it their range, but until they have the right to control it they can not prevent others from grazing upon it. In fact, there are about 60,000 sheep from Wasco and Sherman counties which feed over it as they pass to the Blue Mountains in the spring and return in the fall. The case of Mr Shrum inducting his sons into wool-growing as his partners is not an isolated one. I met a Mr. Ben. Kelsey, of Fossil, Gilliam County, at Dallas City on June 4, waiting to make sale of 98,000 pounds of very fine and light high grade Merino wool, the product of sheep owned by himself and sons.

The following illustrates a form of organized capital employed in sheep husbandry which is unpopular, and the fear of which is the only objection made to private ownership of land. The case is given to show that the present system is no hindrance to this kind of associations and monopolizing tendencies.

The Bauldwin Land and Stock Company is located in Crook County, Oregon. Two of its chief stockholders are bankers, and residents of Portland, Oregon. It has attained the ownership, by purchase from retiring cattlemen, of some of the choicest locations in the county for the production of forage and control of large bodies of public land; some of these places are 30 miles apart. At the central station of Hay Creek is the superintendent's residence and office. A post-office and schoolhouse, a blacksmith's shop and general store are maintained. The stock consists of 35,000 sheep and the additional animals necessary for such a plant. Ram breeding and wool and mutton production constitute the business, and items marketed and ready for market this season are between 300,000 and 400,000 pounds of wool, 10,000 mutton sheep, and 1,500 rams. Thirty men are employed, very few of whom are married (the preference being for single men). The business is well managed, on a liberal scale as to wages and food, but the method is not popular with the families resident in the county.

A much more popular form of a combined breeding and wool-growing plant is that of the Hon. George Chandler, of Baker City, Baker County. In answer to a letter he reports that he keeps 1,500 thoroughbred Merinos under the herding system; reports 80 per cent of lamb increase, and an average fleece yield of 14 pounds, for which he is offered 12½ cents per pound. He prefers wild-grass hay to alfalfa. His flock is one of the local sources of supply of pure-bred rams (of which there are many in eastern Oregon), the output of which are sold for about 'an average of $15 per head." On certain lowlands of a swampy character when wet the best grasses for hay are native wild grasses. On sandy alluvions on the margins of streams, or on irrigable plains, alfalfa, wheat, rye, and on filled-up lake beds and in narrow valleys near the summit of mountains, wild grasses again make the best hay. Rye as a cultivated plant is surest for high, dry land, and is most used in frosty localities. In western Oregon the flock-owner has a great variety of hay plants and other feeds to choose from, as all crops common to the temperate zone will grow and do well. Oats hay cut green is a very generally preferred special feed for sheep in the winter, where any special provision is made.

Since the partial arrest of wool-growing in 1883, there has been a disposition to economize in the matter of outlay for improved rams, and many flock-owners prefer a good, strong grade of the third and fourth cross of the Merino to a pure blood. So that breeding for the best style of Merinos has not met with great encouragement for the past eight years in Oregon. The oldest established flocks for ram breeding at

present in Oregon are those of Andrew Harrison, of Jefferson, Marion County, representing the flock of John Minto, established in 1860; D. M. Guthrie, Dallas, Polk County, established in 1860; T. L. Davidson and F. R. Smith, Salem, in 1861. These are all Merino breeders. S. F. Mascher, Silverton, breeds French Merino and Shropshire. David Craig and R. W. Carey, of McCleary, the former Cotswold sheep and Angora goats, the latter Merino and Shropshire sheep; James Witteycome, Hillsboro, Cotswolds; Ladd S. Reed, of Reedville, Cotswold and Leicester; Robert Scott, Milwaukee, Cotswold and Dorset Horn; D. W. Stearns, Oakland, Douglas County, French Merino. The Bauldwin Land and Stock Company, Hay Creek, Crook County, Mr. Cunningham, Pilot Rock, Umatilla County, George Chandler, Baker City, and many of the largest wool-growers in the State have long practiced breeding their own stock animals.

At the Centennial Exhibition in 1876, a medal was awarded to S. G. Reed, of Portland, for "three samples of Leicester combing wool and three samples of Cotswold combing wool noticeable for long staple and bright luster." Another was awarded to M. Wilkin, of Lane County, for crossbred Cotswold wool retaining the length of the pure-blood, but of increased fineness and freedom from hair.

INDEX.

	Page
Adams, Seth, importations of Merino sheep by	136
Alabama, sheep and wool statistics of	688
husbandry of	686
Ancon or Otter sheep	70
Angora goats in Texas	912
Arizona, number and value of sheep in	945
physical characteristics of	935
sheep husbandry in	940
Arkansas, sheep husbandry in	885
Arlington long-wooled sheep	59
sheep shearings	61
Armstrong, Gen. John, importations of French Merinos by	170
Atwood Merinos	258
Stephen	257
Barbary sheep	78
Basque sheepmen in California	972
Berkshire (Mass.) County Fair	77
Berry, William, flock of	493
Bighorn, Rocky Mountain	11
Black-Top Merino Association, scale of points	515
Merinos, improved	514
Spanish Merinos, standard of	494
Boston, sheep consumed in	256
British inquiry into colonial industries	105
Broad-tailed Tunis or Barbary sheep	78
California, early sheep husbandry of	947
mountain pastures of	963
number and value of sheep in	954
sheep and wool industries of	953
Canada, sheep in	343
Campbell, George	304
Carolinas, The, sheep in	48
Centennial Fair of 1876, Merinos at	321
Chapman, Albert	314
Cheviots in New York	396, 414
western Pennsylvania	520
Clay, Cassius M., Southdowns of	666
Cockrill, Mark R., pioneer flockmaster	672, 681
Colonial period, sheep and wool in	49
Colorado, number and value of sheep in	794
sheep husbandry of	786
Columbian Society, etc	76
Columbus, Christopher, introduction of sheep into America by	17

	Page.
Connecticut, first sheep in	42
Merinos in	256
sheep and wool in	278
Cornbury, Lord, royal governor of New York	103
Cornish, John, cloth works of	40
inventory of	98
Cortez, sheep brought to America by	18
Cotswolds in New York	368, 399
Coxe, Tench, on wool and mutton	50
Cross-breeding in California	356
Crutchfield, Thomas, letter of	670
Custis, G. W. P., as a sheepman	59
Dakota wools	763
Dall's mountain sheep	16
Delaine Merinos, scale of points of Association of	512
standard of	511
Victor-Beall	508
scale of points	509
Delaware, early sheep husbandry of	30
Merinos in	432
sheep and wool in	446
Dickinson Merinos, scale of points	527
William R., flock of	522
District of Columbia, Merinos in	447
Dog depredations in Missouri	866
Dogs, damages in Alabama	687
law concerning, in Tennessee	678
Dorset Horn sheep in Connecticut	279
New York	421
Pennsylvania	438, 520
Dorsey breed of sheep	62
Don Pedro, Spanish Merino ram	134
Dupont de Nemours, importation of sheep by	134
Eastern States, sheep of	50
Elitharp, Prosper	294
Embargo act of 1808	127
Escurial Merinos, importations of	180
Exports of sheep from the United States	94
woolen goods from England	129
Farmer, Capt. George, Leicester sheep of	87
Featherstonhaugh, G. W., mutton sheep of	362
Feeding lambs, experiments in	250
Fish, as food for sheep	340
Florida, first sheep in	19
sheep and wool statistics of	694
husbandry of	688
Folding sheep in Massachusetts	37
Frederick sheep	68
French Merinos in Connecticut	266
Michigan	631
New York	378
Vermont	319
Friesland sheep	90
Fulling-mill, first in Massachusetts	33
Georgia, colony of, sheep in	48

	Page.
Georgia, Merinos in	477
sheep husbandry of	479
Gibson, Paris, the Montana flockmaster	704
Grasses of Arizona	946
Montana	720
Hamilton, Alexander, report of	119
Hammond, Edwin	290
Hampshire Downs	414
Henry, Prof. W. A., on feeding sheep	656
Herefordshire, old sheep of	46
Holland, the center of wool industries	90
Holloway, Herbert, v. s., reports of	705, 718
Hosiery, early manufacture of	115
Household woolen industry	95
Humphreys, Col. David	154
Illinois, decline of sheep husbandry in	606
Merinos in	588
mutton sheep in	604
Improved Black-Top Merinos	514
Saxony scale of points	518
Indiana, mutton sheep in	587
sheep industry of	575
statistics of sheep and wool	588
Iowa, personal experience in	830
sheep husbandry	822
State Sheep-Breeders' Association	826
value of sheep in	821
wolves in	828
Irish sheep, importations of	86
Irrigation in New Mexico	928
Jamaica, L. I., cloth-mill at	110
Jarvis, William	172
Merino importations by	173
Jefferson, Thomas, importation of Merinos into Virginia by	174
Kansas, extent and resources of	871
number and value of sheep in	872
sheep-feeding in	879
sheep husbandry	873
Kelsey, Rev. F. D., on grasses of Montana	720
Kentucky, Cotswolds in	659
pioneer sheep of	657
Southdowns in	658
Lamb club in Tennessee	675
Lambs, early, in Massachusetts	248
experiments in feeding	250
Laws relating to sheep, Colorado	797
Montana	724
North Dakota	749
South Dakota	769
Wyoming	783
Leicester sheep in New York	366
the New	87
Lincolnshires in New York	370
Livingston, Robert R	138

	Page.
Longfellow, Gilbert, island flock of	337
Madison, James, home-made inaugural suit of	164
Maine, Merinos in	333
mutton sheep in	344
Marengo sheep	78
Maryland, mutton sheep in	450
sheep and wool in	452
introduced into	24
Massachusetts, first English sheep in	31
fulling-mill in	33
homespun manufactures of	32
Merinos in	217
sheep and wool in	247
Society for Promoting Agriculture	52
Meacham, H., sheep farm of	900
Meade, Richard W	434
Mease, Dr. James	75
importations of Merinos by	168
Merino wool, size of fibers	316
Merinos, Atwood	258
Black-Top Spanish	494
Delaine, origin of	498, 508
exports of, from Spain	191
French, in Connecticut	266
New York	378
Vermont	319
importations to United States	193
in California	975
Connecticut	256
Delaware	432
Maine	332
Michigan	510
Mississippi	686
New Hampshire	333
New Jersey	425
New York	349
Rhode Island	280
Saxony	225
South Carolina	473
Sweden	222
Vermont	281
Wisconsin	639
introduction of Spanish	131
Rambouillet	632
Saxony in New York	373
Virginia	457
United States	231
Silesian, in New York	382
Spanish, in New England	217
standard weight of	626
the Rambouillet flock	288
Rich flock	300
Michigan, Merinos in	610
Minnesota, number and value of sheep in	811
personal experience in	818

Page.
Minnesota, sheep industry of 812
Mississippi, sheep of 680
Missouri, number and value of sheep in 862
physical conditions of 853
sheep husbandry of 857
Montana, first sheep in 706
grasses of 720
personal experience in 724
physical features of 702
sheep industry of 707
laws of 724
Mountain pastures of California 963
Mutton sheep in Illinois 604
Indiana 587
Maryland 450
Michigan 634
New Jersey 428
Ohio 565
Tennessee 673
Virginia 462
Wisconsin 652
Navajo Indian flockmasters 929, 945
Nebraska, number and value of sheep in 837
personal experience in 849
promoters of the sheep industry in 735
sheep feeding in 845
husbandry of 838
shearing in 842
New Hampshire, first sheep of 27
Merinos in 329, 425
mutton sheep in 428
sheep and wool of 433
New Leicester sheep 87
New Mexico, laws relating to sheep 932
number and value of sheep in 927
physical features of 914
sheep husbandry of 917
New York, Cotswolds in 368
first imports of sheep to 24
Leicesters in 366
Merinos in 349
sheep and wool in 424
Norfolk and Suffolk, aboriginal sheep of 46
North Carolina, Merinos in 469
sheep and wool in 471
North Dakota, natural resources of 729
personal experience in 746
"promoters" of the sheep industry in 735
sheep husbandry 738
laws 749
Number of sheep in the United States, 1810 93
Ohio, number and value of sheep in 574
sheep husbandry of 521
Oregon and Washington, sheep husbandry of 976
Otter, Ancon or, sheep 70

	Page.
Ovis montana	11
Dalli	16
Oxfordshire Downs	241, 440
Patterson, John D., a noted sheepman	378
Paular Merinos, purchase of	185
Pennsylvania, introduction of sheep into	29
Merinos in	433
sheep and wool in	439
southwestern, sheep in	483
Personal experience in Arkansas	893
Colorado	798
Iowa	830
Kansas	880
Minnesota	818
Missouri	868
Nebraska	849
New Mexico	930
South Dakota	765
Wyoming	781
Peters, Richard, Atlanta, Ga	479
broad-tailed sheep of	78
on sheep breeding	56
Piney woods sheep	683, 691
Powell, John Hare	83, 436
Prairie fires in North Dakota	745
Predatory animals in California	961
"Promoters" of sheep husbandry, North Dakota	735
South Dakota	764
Rambouillet flock of Merinos	208
Merino Association	632
Randall, Henry S., on Southern sheep husbandry	457
Range facilities of Utah	803
Rapp, George, wool-grower and manufacturer	484
Rhode Island, Merinos in	280
sheep husbandry of	41
Richardson, John	13
Rocky Mountain sheep	11
Romney Marsh sheep	45
Rowley, Mass., fulling-mill at	96
Sanborn, Prof. J. W., on Missouri sheep husbandry	855
St. Louis wool market	865
Saxony Merinos, first in United States	231
Improved	517
in New York	373
Ohio	546
Pennsylvania	515
Virginia	457
origin of	225
Scholfield, Arthur, woolen manufacturer	121
Scott, Robert W., flock of	661
Shearing at Arlington	61
in Illinois	596, 598, 601
Indiana	578
Iowa	825
Kansas	875

Page
Shearing in Michigan 614, 620
Minnesota 814
Missouri 859
Montana 713
Nebraska 842
Wisconsin 646
Livingston's Clermont flock 142
records in Vermont 305, 312
tests in New York 355, 390, 395, 405, 408, 410
Ohio 553
western Pennsylvania 488
Sheep and wool statistics of Alabama 688
Connecticut 278
Florida 604
Georgia 481
Maine 342
Maryland 452
New Hampshire 333
New York 424
North Carolina 471
Ohio 567
South Carolina 476
Tennessee 680
Vermont 329
Virginia 466
West Virginia 469
Wyoming 777
east of the Mississippi, statistics of 696
feeding in Kansas 879
Minnesota 817
Nebraska 845
number to the square mile 699
shed, design for 818
Shropshires in Indiana 580
scale of points 585
Silesian Merinos 382, 505
Smith Island sheep 67
South Dakota sheep industry 751
laws 769
"promoters" in 764
South Carolina Agricultural Society 74
sheep and wool in 476
husbandry of, 1881 475
Southdown sheep 47, 92, 397, 658
Spanish explorers and sheep 17
Merino sheep, introduction of 131
Standard Delaine Merinos 511
Suffolk Downs 421
Summary of Part I 695
Sussex or Southdown 47
Sweden, Merinos in 222
Syracuse convention of wool-growers 558
Tariff acts of 1824 and 1828 549
1867 ..... 507, 561, 647
1883 ..... 322, 564, 628

	Page
Tariff system, its effect on wool-growing	240, 557
Teeswater sheep	91
Taylor, Col. John, writings of	453
Tennessee, lamb club in	675
mutton sheep in	673
sheep husbandry of	669
Texas, central	901
northeastern	898
sheep husbandry of	895
southwest	907
Texel sheep in New York	24, 399
origin of	89
Tunis or Barbary broad-tailed sheep	78
Utah, experience of sheep-owners in	808
number of sheep in	803
rainfall and irrigation in	802
sheep husbandry of	805
Vermont Merinos	281
Merino Sheep-Breeders Association	323
sheep and wool in	329
Victor-Beall Delaine Merinos	508
Virginia, first sheep in	21
Merinos in	453
mutton sheep in	462
Wadsworth, Jeremiah, woolen manufacturer	118
War of the rebellion, effect on sheep and woolen industries	321, 336, 389, 505, 552, 682
Washington County, Pa., sheep in	490
George, as a sheep-breeder	53
Watson, Elkanah, pioneer of sheep industry	122, 218
Watts, James W., his broad-tailed sheep	85
Wells & Dickinson, flockmasters and manufacturers	492
West Virginia, Merinos in	467
Panhandle of	483
sheep and wool in	489
Wiltshire sheep, Old	45
Wisconsin, Merinos in	639
mutton sheep in	652
Wolves in Iowa	828
Wood, James, Hampshire Downs of	419
Wool-growers' convention at Syracuse	358
Woolen industry, the household	95
Wool clips of Utah	807
market, the St. Louis	885
prices of, and of other farm products	570
in gold and currency	573
1824 to 1890	569
1871 to 1890	562
production of, east of Mississippi River	697
Wools of the Dakotas	763
Wyoming grazing lands	776
sheep husbandry	771
laws of	783
water supply	778